

Connecticut Department of Energy and Environmental Protection

Comprehensive Open Space Acquisition Strategy

2016-2020 Green Plan

March 2016
Preliminary Draft

PRELIMINARY DRAFT

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PRELIMINARY DRAFT

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Executive Summary

The Connecticut Comprehensive Open Space Acquisition Strategy (Green Plan) is a statewide planning document developed by the Department of Energy and Environmental Protection (DEEP) in partnership with municipalities and numerous conservation organizations to guide land acquisitions towards achieving the state’s open space goal. This version of the Green Plan presents a coordinated approach for land conservation by the State of Connecticut, through DEEP and its conservation partners (municipalities, land conservation organizations, and water companies – known collectively as DEEP’s Partners).

Integral to this plan is a 5-Year Action Strategy meant to unify the efforts of all conservation actors. This action-oriented framework covers the period of time from the end of the previous plan through 2020. Implementation of this 5-Year Action Strategy and the supporting materials of the Green Plan by DEEP and its Partners will greatly advance land conservation in Connecticut.

Section 23-8b of the Connecticut General Statutes set a goal of conserving 21 percent, or 673,210 acres, of Connecticut’s land base as open space by year 2023. The statute states that:

- 10 percent (320,576 acres) shall be acquired by the State, and
- 11 percent (352,634 acres) shall be acquired by partners, which includes municipalities, non-profit land conservation organizations, and water companies.

As of December 31, 2015, an estimated 501,330 acres were held as open space in Connecticut, or 74.5 percent of the total open space goal. DEEP and its Partners need to acquire or protect an additional 62,960 acres and 108,920 acres as open space, respectively, to reach their target goals.

While progress has been made over the decades on preserving open space, lands of high conservation and recreation value continue to be lost to development, even with the current economic conditions. Conservation lands increase greatly in value when they are interconnected with other conservation lands. One parcel lost to development at critical junction can diminish the conservation and recreation value of surrounding lands.

1 The State of Connecticut in partnership with many municipalities, regional councils of
2 government, and private developers are working to focus development in areas of existing
3 infrastructure, including areas with access to water, sewer, reliable energy, and transit. There has
4 been significant investment in this regard in recent years. In order to protect and increase the
5 value of the land DEEP and its Partners have already protected, an increase in land conservation
6 in the most critical locations is needed. This investment will secure the future of Connecticut's
7 natural heritage, its rural landscape, its abundance of recreational resources, its high-quality
8 waters, and its strong communities.

9
10 To meet the needs and address the issues facing the State's residents and environmental
11 resources, the Green Plan:

- 12 ➤ Discusses the purpose of, need for, and threats to land conservation in the state;
- 13 ➤ Provides an estimate of the acres of land protected by the State and its partners;
- 14 ➤ Discusses a system for increasing the accuracy of open space lands;
- 15 ➤ Describes the highest priorities for acquisition of land identified to be in greatest need for
16 immediate preservation and the general location of each priority;
- 17 ➤ Provides timetables for the acquisition of land by the State and plans for management of
18 such land; and
- 19 ➤ Lists Connecticut open space resources to be used for acquisition and management of
20 such land.
- 21
- 22

23 ***Measuring Plan Success***

24 This new Green Plan should enhance open space acquisition efforts and outcomes
25 through the implementation of a set of acquisition target goals and programmatic objectives.
26 Specifically, the State's efforts to acquire certain lands for public use and benefit are dedicated to
27 the following themes:

- 28
- 29 • Natural Waters and Drinking Water Resources;
- 30 • Areas Significant to the Coast;
- 31 • Natural Heritage Resources; and
- 32 • Natural Resource-based Outdoor Recreation
- 33

34 In addition to these, DEEP and its Partners seek to increase acquisitions and provide
35 people of all socio-economic levels with sufficient proximity to accessible open space through
36 the following program administration themes:

- Strategize Acquisitions for Climate Change Resiliency;
- Build Partnerships and Public Support for Open Space;
- Improve Open Space Data and Tools;
- Develop Strategies for Preserving in Perpetuity State Lands of High Conservation Value; and
- Optimize State Acquisition and Grant Program Operations.

Shown in the table below, over the next five years, DEEP and its Partners should target to acquire a total 11,500 acres as open space: 5,550 acres to be acquired by DEEP and 5,950 acres to be acquired by its Partners.

Green Plan Conservation Focus Areas for land acquisition or protection by DEEP and its partners through 2020.			
Conservation Focus Area	Target Acres	DEEP Acquisitions (Acres)	Partner Acquisitions (Acres)
Watershed Lands	5,000	1,500	3,500
		<i>(30% of Focus Area Total)</i>	<i>(70% of Focus Area Total)</i>
Coastal Lands	1,000	300	700
		<i>(30% of Focus Area Total)</i>	<i>(70% of Focus Area Total)</i>
Natural Heritage Resources	1,000	750	250
		<i>(75% of Focus Area Total)</i>	<i>(25% of Focus Area Total)</i>
Other Natural Resource and Recreation Lands Held by DEEP	2,500	2,500	0
		<i>(100% of Focus Area Total)</i>	
Recreational Trails	2,000	500	1,500
		<i>(25% of Focus Area Total)</i>	<i>(75% of Focus Area Total)</i>
Totals	11,500	5,550	5,950

These acquisition targets require greater investment by DEEP and its land acquisition partners than has occurred in the recent past. Even with this level of investment, DEEP and its Partners will not meet the State's overall open space goals by 2023.

Regardless of the degree of resources that are provided for land conservation, DEEP and its Partners must focus on targeting the highest-value conservation and recreation lands for open space preservation. It is anticipated that with the new, focused, and collaborative efforts of this Green Plan, outcomes will increase.

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5-year Action Strategy to Achieve Connecticut’s Open Space Goal

The Green Plan set specific priorities and goals to guide and advance statewide land conservation efforts and initiatives, including protection of the best remaining land for public use and benefit. Lands of public use and benefit include those lands that are used for natural resource protection, conservation, public enjoyment, recreational purposes, or any activity associated with improving or maintaining such purposes.

Detailed in the following sections, the State’s efforts to acquire lands for public use and benefit are dedicated to four themes:

Statewide Land Acquisition Priorities

- a. Natural Waters and Drinking Water Resources
- b. Areas Significant to the Coast
- c. Natural Heritage Resources
- d. Natural Resource-based Outdoor Recreation

The land acquisition priorities were developed by DEEP through the compilation of information and consultation with other state agencies and outside experts to determine a list of environmental and recreational resources which are under-represented in the existing system of protected open space and in need of immediate protection from land-use or climate change.

In addition to the land acquisition priorities, DEEP and its partners seek to increase acquisitions and provide people of all socio-economic levels with sufficient proximity to accessible open space and the opportunities it provides through the following program administration priorities:

State Program Administration Priorities

1. Strategize Acquisitions for Climate Change Resiliency
2. Build Partnerships and Public Support for Open Space
3. Improve Open Space Data and Tools
4. Develop Strategies for Preserving in Perpetuity State Lands of High Conservation Value
5. Optimize State Acquisition and Grant Program Operations

With an estimated 501,330 acres held as open by DEEP and its land conservation partners as of 2015, the Department and its partners need to add about 62,960 acres and 108,920 acres, respectively, to their land holdings in order to remain on track to reaching the total state open space goal of 673,210 acres by year 2023¹. Acquisitions for open space must increase, but even with substantial acreage increases DEEP recognizes it will not be able to meet its goal. Therefore, the focus of the Green Plan is on purchasing high quality lands for conservation, as well as increasing open space acreage.

Through year 2020, the State and its land conservation partners should target to acquire a total 11,500 acres as open space: 5,550 acres to be acquired by DEEP and 5,950 acres to be acquired by its partners. On the following page, Table 1 lists the conservation focus areas in which DEEP and its partners should focus open space efforts to successfully meet the Green Plan's highest priority lands for acquisition.

The goals for each conservation focus area were derived by calculating the land needed to increase land holdings by a certain percentage, where current metrics are available. This percent increase relies on an understanding of the area of lands across the state that are either currently held in protective forms or that remain unprotected and undeveloped. DEEP used the current

¹ (CGS) Sec. 23-8b

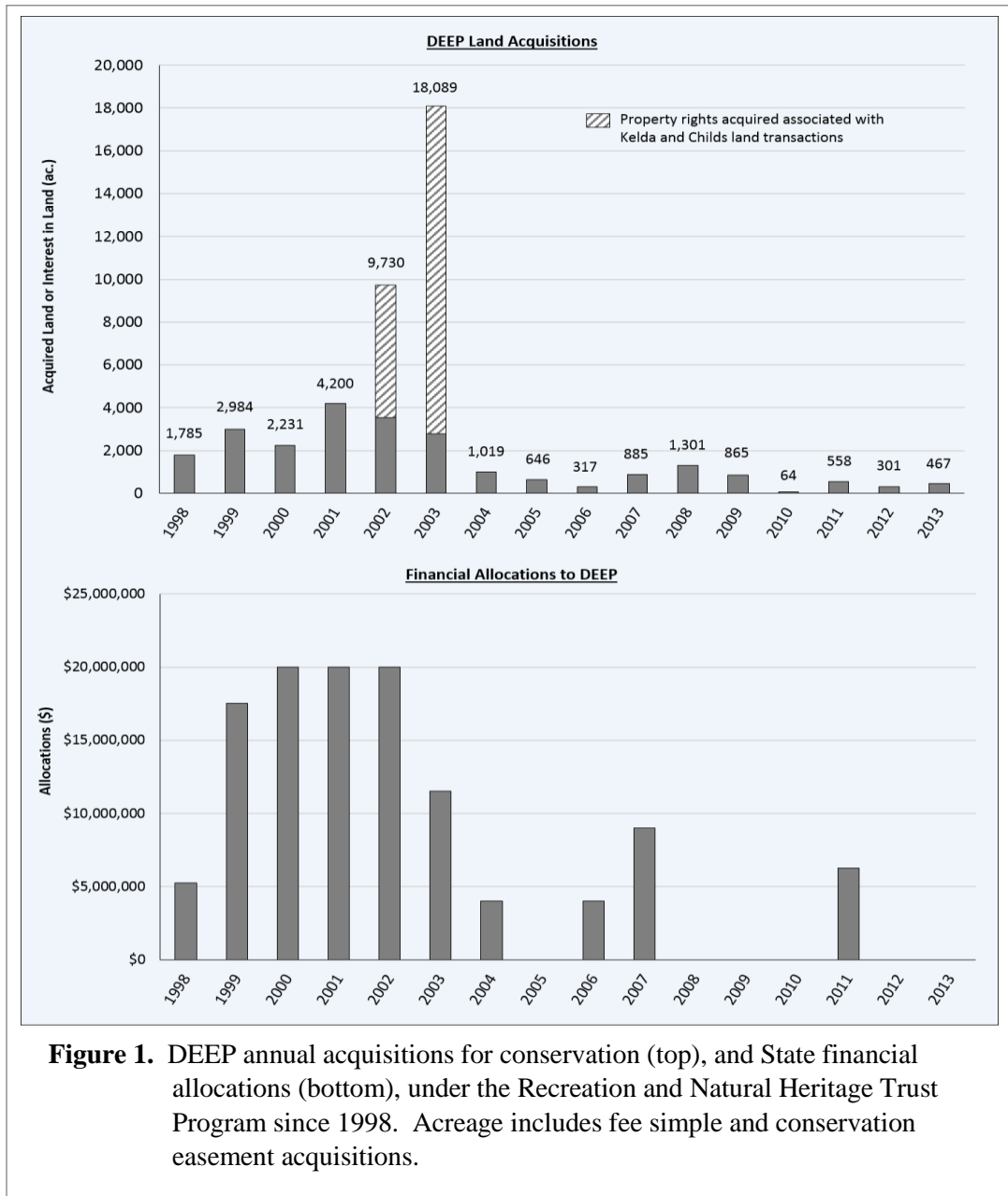
and best data available to set these conservation focus area acreage targets that comprise the total five-year acquisition goal.

Table 1. Conservation Focus Areas for land acquisition or protection by DEEP and its Partners through 2020.			
Conservation Focus Area	Target Acres	DEEP Acquisitions (Acres)	Partner Acquisitions (Acres)
Watershed Lands	5,000	1,500	3,500
		<i>(30% of Focus Area Total)</i>	<i>(70% of Focus Area Total)</i>
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Recreational Trails	2,000	500	1,500
		<i>(50% of Focus Area Total)</i>	<i>(50% of Focus Area Total)</i>
Totals	11,500	5,550	5,950

These acquisition targets set for DEEP and its land acquisition partners are not ideal and do not keep the state on track to meeting its overall open space goal by 2023. Declining State, municipal and private resources and acquisitions rates show that they are a stretch but possibly attainable. The most acquisitions by DEEP were made in 2001, the same year the statutory goal to protect 21 percent of the state was established and financial allocations for land acquisition were at their peak (Figure 1).

The Green Plan's goals are attainable, but will require the procurement of adequate financial and staffing resources to achieve significant results. Using an average per acre cost of about \$7,645 for properties purchased between 2007 and 2013 under the State's primary land acquisition program, and given the acreage needed to meet DEEP's interim open space target of

5,550 acres as stated in Table 1, total funding needs through 2020 would equate to \$214 million, or about \$42.8 million each year.



Land Acquisition Priorities

Detailed in the next four sections are the State's highest priorities for the acquisition of land for open space by DEEP and its conservation partners through the next five years. The conservation of those specified areas will protect the best remaining lands that serve to provide important environmental services and recreational opportunities to all of the state's residents.

Based on the current and best data available, each section sets target goals to measure progress towards a certain land acquisition priority. Actions taken to achieve goals for one open space objective can contribute to reaching goals for another. In addition, funding needs for both DEEP and its partners to achieve goals are estimated and are based on the average per acre cost of about \$7,645 spent on properties acquired under the State's Recreation and Natural Heritage Trust Program between the years 2007 and 2013.

For each land acquisition priority, the actors or primary parties capable of carrying out objectives are provided. Generally, most actions will be carried out in cooperation with DEEP's Land Acquisition and Management Unit (the agency's unit for acquiring lands to be held under DEEP's custody and control), municipalities, and non-profit land conservation organizations (NLCOs).

A. Natural Waters & Drinking Water Resources

Over the next five years, DEEP and its Partners should acquire 5,000 acres that serve to protect the state's natural waters and drinking water resources.

The Green Plan gives priority to the acquisition of lands that serve to protect high-quality natural waters and drinking water resources. Clean water, including in our rivers, lakes, and inland wetlands, are essential to life and provide some of the richest wildlife habitat in the state. Land conservation is an important part of watershed management for protecting habitat and water quality against impacts by fragmentation, climate change, runoff pollution, and other threats.

Connecticut has several remaining areas of core forest blocks, characterized as unfragmented forested areas relatively far from non-forested areas². Core forest areas promote water infiltration and often support critical cold water streams. Protecting core forest will conserve natural vegetated cover needed to maintain cold water streams that support habitat for native trout, aquatic invertebrates, and other dependent wildlife, and will serve numerous water quality ecosystem functions, such as reducing erosion and storm water runoff.

Green Plan Target

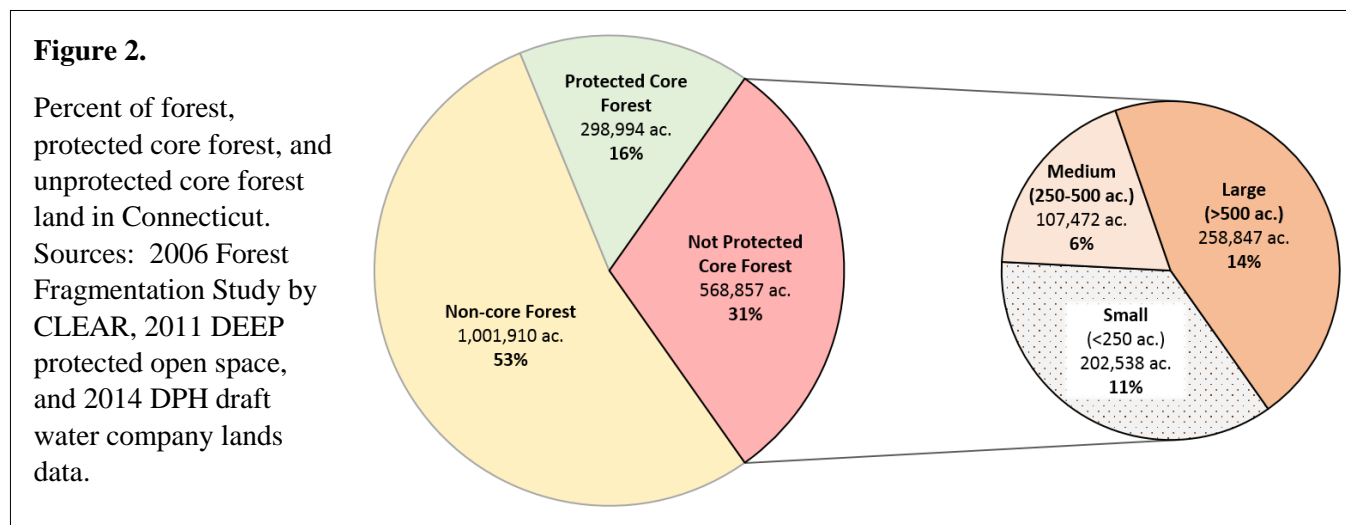
Over the next 5 years, conserve:

- **3,000 acres** of core forest and Connecticut's highest-quality natural water resources
- **2,000 acres** of underground and surface public water supply watershed lands

Increases the area of current protected holdings by ½ percent each

² CLEAR 2007. [Forest Fragmentation Categories Explained](#), Connecticut's Changing Landscape Study.

1 Through the current and best data available, it is estimated that there are approximately 569,000
2 acres of unprotected core forest in the state (Figure 2). Over half of these lands are located
3 within medium and large tracts (250+ acres) of core forest (Figure 3).



4
5 Other high-quality natural waters exist throughout Connecticut. For example, DEEP has
6 begun a public process of classifying stream flows for use by the state and others to maintain or
7 restore flows in healthy or impaired rivers and streams³. Currently, stream flow classifications
8 for the Thames, Pawcatuck and South Central Coastal River Basin have been developed and an
9 [interactive map](#) has been made publicly available.

10 The highest quality streams (known as Class 1) exhibit the depth, volume, velocity, and
11 variation of flow and water levels necessary to maintain habitat conditions supportive of an
12 aquatic, biological community characteristic of that typically present in free-flowing stream
13 systems. Protecting lands that buffer these most natural streams is vital to protecting this high-
14 quality water resource.

³ More about this process at DEEP's [State Stream Flow Standards and Regulations webpage](#)

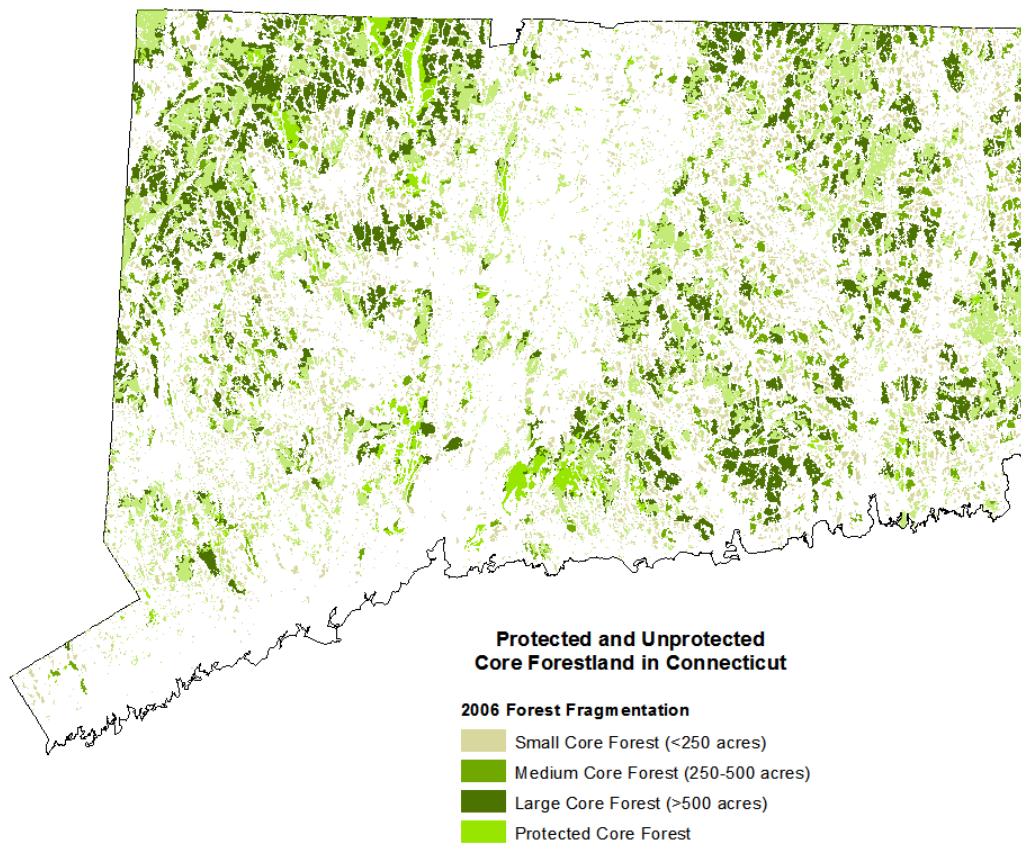


Figure 3. Areas of protected and unprotected core forestland in Connecticut, by forest tract size.
Sources: 2006 Forest Fragmentation Study by CLEAR, 2011 DEEP protected open space,
and 2014 DPH draft water company lands data layers.

While not all streams will be classified as Class 1, there are many ecosystem benefits to protecting other high-quality natural water resources, such as headwater stream areas, recharge areas for groundwater aquifers, and floodplains. Development in these areas have the greatest impact on statewide water quality, in-water habitat, and potential aquatic communities. Acquiring free-flowing water courses, aquifer recharge areas, and floodplains will protect water quality by slowing runoff, trapping sediments, and reducing flood peaks. Protection of these ecologically important and sensitive areas also maintains habitat supportive of a diversity of fish and wildlife species.

To protect the integrity of the state’s natural water quality, over the next five years DEEP and its conservation partners should target to acquire or protect 3,000 acres of lands having the most direct benefit to protecting Connecticut’s high-quality natural water resources, including core forests, cold water streams, Class 1 streams, headwater stream areas, recharge areas for groundwater aquifers, and floodplains.

In addition to protecting water resources for ecosystem benefit, Connecticut must protect its drinking water source areas for the benefit of public health and welfare. Eighteen percent of the state’s land lies within public drinking water supply source water areas.

Over the next five years, DEEP and its partners should target to protect 2,000 acres of land within public drinking water supply source areas, including land that will protect potential water supplies for the future, roughly distributed as 1,250 acres of land within public water supply watersheds and 750 acres within APAs.

Of the total surface public water supply watershed land in Connecticut, 44 percent is owned by DEEP and its land conservation partners (Figure 4). Another 15 percent of such lands are developed for commercial, industrial, or residential purposes,

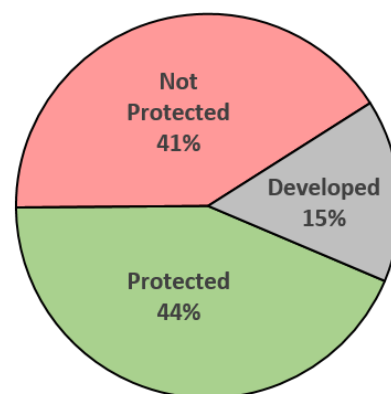
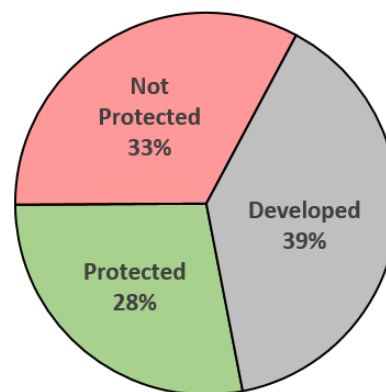


Figure 4. Connecticut’s public water supply watershed lands (*top*) and Aquifer Protection Areas (*bottom*) protected by DEEP and its partners.

Sources: 2010-2015 DEEP and 2010 land cover, and 2014 Dept. of Public Health draft water company lands data.



1 leaving 41 percent of the total surface water supply lands that should be evaluated for open
2 space and water protection.

3 Over 82,000 acres in Connecticut are within officially designated Aquifer Protection
4 Areas (APAs) and as such are subject to certain state land-use and conversion regulations
5 designed to guard against pollution and contamination of public groundwater sources.

6 Of the land within APAs, 28 percent are protected as open space by DEEP and its
7 partners. Much of the land within APAs are developed because wells were established to serve
8 nearby residential and commercial areas, which leaves about one-third of lands within APAs not
9 owned by DEEP or its partners left for evaluation for open space and water protection.

11 **Project & Funding Selection**

12 To protect the quality of the state's natural water and water drinking resources, project
13 and funding selection should give priority to undeveloped and unprotected lands that are:

- 14 • Core forests, lands that buffer cold water streams, Class 1 streams, headwater
15 stream areas, recharge areas for groundwater aquifers, and floodplains; or
- 16
17 • In close proximity to public water supply wells or high quality aquifers that may
18 yield high water quality, or are Class I, Class II, and/or Class I/II-type watershed
19 lands.

A.1.: Natural Waters & Drinking Water Resources		
<u>Actions</u>	<u>Actors</u>	<u>Target Goal</u>
1) Protect high-quality natural water resources	<ul style="list-style-type: none"> Water companies DEEP Municipalities NLCOs 	<ul style="list-style-type: none"> 3,000 acres of water ecosystem lands protected. <ul style="list-style-type: none"> - 2,000 acres of which are medium-to-large core forest protected.
2) Ensure safe and adequate drinking water supplies.		<ul style="list-style-type: none"> 1,250 acres of lands within public water supply watersheds protected. 750 acres of lands within Aquifer Protection Areas protected.

For more information on these topics see [Section V.A.I.](#) (Freshwater and Inland Wetland Habitats), [Section V.A.III.](#) (Forested Upland Habitats), and [Section V.B.](#) (Drinking Water Resources).

1
2

A.2.: Five-year Funding Needs to Reach Acquisition Goals						
Total Acres Watershed Lands	DEEP Acquisition (Acres)	Partner Acquisition (Acres)	Total Acquisition Costs*	DEEP Cost Share	Partner Cost Share	DEEP Grant Share
5,000	1,500	3,500	\$38,225,000	\$11,467,500	\$17,201,250	\$9,556,250
	(30% of Total)	(70% of Total)		(30% of Total Cost)	(45% of Total Cost)	(25% of Total Cost)

* based on the average per acre cost of \$7,645 for properties acquired under the State Recreation and Natural Heritage Trust Program between 2007 and 2013.

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B. Areas Significant to the Coast

Over the next five years, DEEP and its Partners should acquire 1,000 acres that serve to protect coastal resources.

The Green Plan gives priority to the acquisition of coastal lands to meet the coastal resource conservation and coastal public recreation goals set forth in DEEP's [Coastal and Estuarine Land Conservation Program \(CELCP\) Plan](#).

Green Plan Target

Over the next 5 years, conserve **1,000 acres, or about 3%**, of remaining unprotected lands within the state's coastal boundary.

Connecticut's CELCP Plan describes the State's coastal land conservation needs and prioritizes the types of coastal land acquisition opportunities that can be nominated for federal CELCP grant financing assistance. According to the CELCP Plan, DEEP and its partners own or hold other legal conservation interest to land along 328 miles, or 36 percent, of Connecticut's total shoreline⁴. The remaining 737 miles of unprotected land bordering coastal waters, and about 33,000 acres within the state's coastal boundary⁵, should be evaluated for open space protection (Figure 5).

To advance the conservation of ecologically and recreationally significant coastal lands over the next five years, DEEP and its partners should target to acquire or protect 1,000 acres, or about three percent, of remaining unprotected and undeveloped lands located within Connecticut's coastal boundary.

⁴ The CELCP Plan states that protected shoreline is land, classified as protected open space, fronting coastal waters, including rivers, within Connecticut's coastal boundary.

⁵ Connecticut's coastal boundary is generally defined by a line 1,000 feet inland of a coastal water body or tidal wetland, whichever is further inland ((CGS) Sec. 22a-94b).

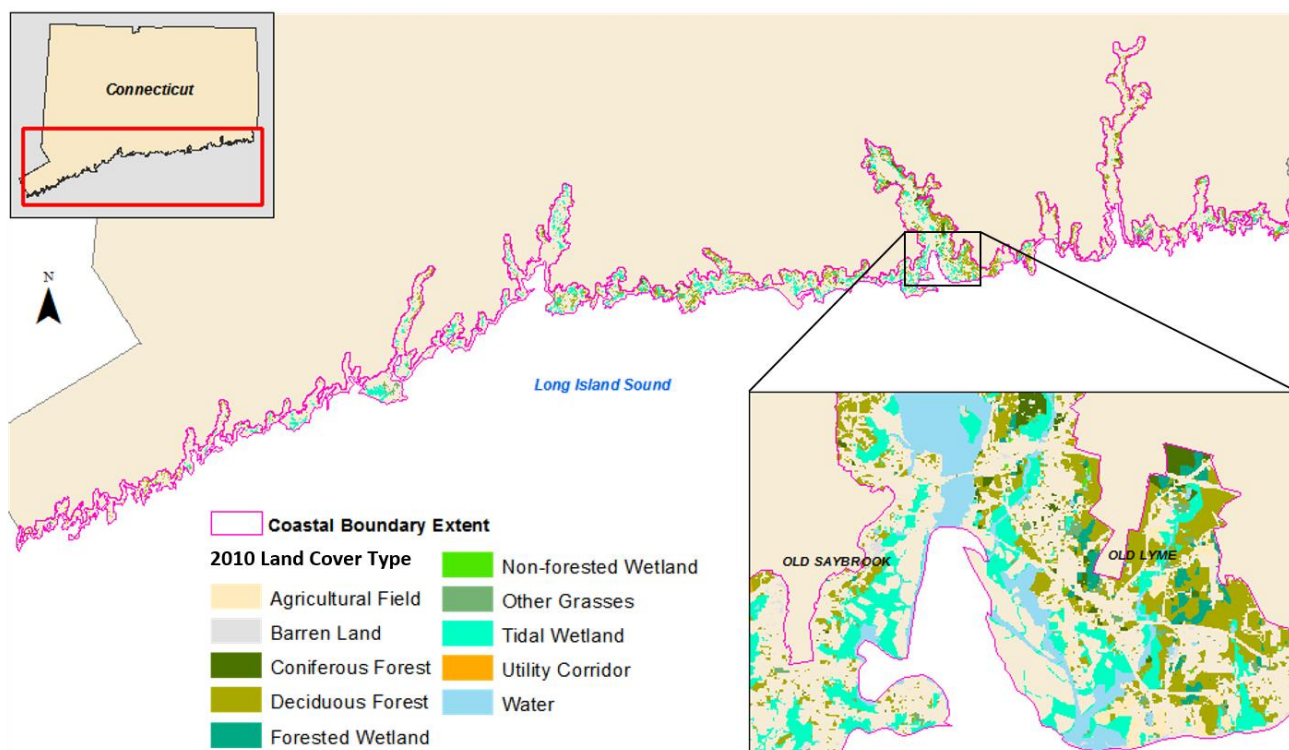


Figure 5. Lands within Connecticut’s coastal boundary that are both unprotected and undeveloped.
Sources: 2010 land cover by [CLEAR](#) and 2011 DEEP protected open space data layers.

Project & Funding Selection

To meet the coastal resource conservation and coastal recreation goals set forth in the CELCP Plan, project and funding selection should give priority to coastal areas with lands:

- In close proximity to or contiguous to areas of existing protected open space;
- Having large blocks of unfragmented coastal forest and tidal marsh advancement zones, or lands adjacent to tidal marsh, to accommodate for species shifts or inland migration due to climate change;
- Having coastal habitats emphasized for acquisition in the [Connecticut Wildlife Action Plan](#); or
- With potential to provide new or expand existing coastal public recreational trails, fishing, and swimming access, especially in high density residential areas.

The DEEP CELCP Plan [Focus Area Viewer](#) can be used to locate coastal land acquisition ‘focus areas’ most likely to contain priority coastal land conservation values (e.g., tidal marsh migration areas, core coastal forests). Information provided by the Focus Area Viewer, other DEEP geo-spatial data, and local coastal area land conservation knowledge can be used by DEEP and its partners to identify potential coastal land acquisition priorities.

The focus area maps used a weighted-sum scoring method (shown in Table 6 in the [CELCP Plan](#)) to identify discrete coastal areas still in unprotected forms of ownership. The conservation of large blocks of coastal forestland, marsh advancement zones, and critical wildlife habitat lands each had significant weights in the CELCP Plan’s focal area identification process.

B.1.: Areas Significant to the Coast		
<u>Actions</u>	<u>Actors</u>	<u>Target Goal</u>
1) Conserve coastal area lands that meet the coastal resource conservation and coastal recreation goals set forth in the 2015 CELCP Plan.	<ul style="list-style-type: none"> • DEEP • Municipalities • NLCOs 	<ul style="list-style-type: none"> • 1,000 acres of lands within the state’s coastal boundary protected.

For more information on these topics see Section [V.A.II.](#) (Coastal Habitats) and [Section V.B.I.](#) (Outdoor Recreation Needs).

B.2.: Five-year Funding Needs to Reach Acquisition Goals						
Total Acres Coastal Lands	DEEP Acquisition (Acres)	Partner Acquisition (Acres)	Total Acquisition Costs*	DEEP Cost Share	Partner Cost Share	DEEP Grant Share
1,000	300 (30% of Total)	700 (70% of Total)	\$7,645,000	\$2,293,500 (30% of Total Cost)	\$3,440,250 (45% of Total Cost)	\$1,911,250 (25% of Total Cost)

* based on the average per acre cost of \$7,645 for properties acquired under the State Recreation and Natural Heritage Trust Program between 2007 and 2013.

C. Natural Heritage Resources

Over the next five years, DEEP and its Partners should acquire 1,000 acres that serve to protect the state's natural heritage resources, including key and critical habitats.

Connecticut's natural heritage is characterized by unique ecological and geological features such as rivers, mountains, scenic ridgelines, coastal and estuarine natural areas, and diverse or rare floral and faunal communities.

The Green Plan gives priority to the acquisition of lands that support important elements of the state's natural heritage, including State endangered and threatened species, non-game species of Greatest Conservation Need, and Connecticut key and Critical Habitats.

Protecting land having important habitat and other natural features ensures the long-term survival of both rare and currently common species. Moreover, investing in the protection of our natural heritage also ensures the public's ability to enjoy and benefit from these resources, such as through wildlife viewing and scientific study of environmental systems.

In 1992, the first Connecticut Endangered Species list was formally accepted. This list included species which were at risk of extirpation from Connecticut and categorized them as Endangered, Threatened, or Special Concern based on the number of populations in the state and the degree of threats to these populations⁶.

In the 2015 revision of the [Connecticut Wildlife Action Plan](#) (CT WAP), species of wildlife and plants were also identified as species of Greatest Conservation Need. Three

Green Plan Target

Over the next 5 years, conserve:

- **500 acres** of key plant, fish, and wildlife habitat;
- **500 acres** of Critical Habitats
Increases current protected holdings by about 1%

⁶ The current list is available at the DEEP [Endangered Species webpage](#)

1 qualitative tiers (most important, very important, and important) were used to highlight the
2 relative ranking of GCN species in terms of regional or state conservation responsibility for these
3 taxa and the immediacy of threats to their populations. The CT WAP also emphasizes the
4 protection of some key habitats for GCN species including grasslands and cold-water streams,
5 among others.

6 In addition to the species lists described above, Connecticut has also identified and
7 mapped the distribution of twenty-seven rare and specialized habitats which have been termed
8 ‘Connecticut Critical Habitats⁷.’ For the purposes of the Green Plan, similar Critical Habitat
9 types have been grouped together, reducing the number of habitats from twenty-seven to
10 seventeen.

11 Based on the current and best data available, it is estimated that roughly half of Critical
12 Habitats mapped (18,000 acres) remain unprotected. Over the next five years, DEEP and its
13 partners should target to protect 1,000 acres of land for natural heritage conservation, half of
14 which should consist of unprotected and undeveloped critical habitats and increase current
15 protected holdings of such land by one percent.

17 **Project & Funding Selection**

18 Because of the value of their ecosystem benefits, greater risk level to loss to land
19 development, or sensitivity to changes in the environment (e.g., climate change, changes to water
20 quality, etc.), land acquisition project and funding selection should give priority to the protection
21 of sand barrens, acidic Atlantic White Cedar swamps, bogs and fens, acidic Red/Black Spruce

⁷ Connecticut Critical Habitat Maps and guidance documents are available at [Connecticut Environmental Conditions Online](#)

basin swamps, circumneutral Northern White Cedar swamps, and rocky summit outcrop habitats (Figure 6).

When the acquisition opportunities arise, cold talus forestland, floodplain forest, dry forest, beachshore, intertidal marsh, and coastal grasslands are also very important for consideration as protected open space. However, the priority ranking of these habitats does not reduce the importance or value of other particular habitat types. Rather, it is DEEP’s attempt to identify habitat types for which it believes the agency and its partners could have the greatest impact over the next five years and which habitats are in the most imminent need of protection.

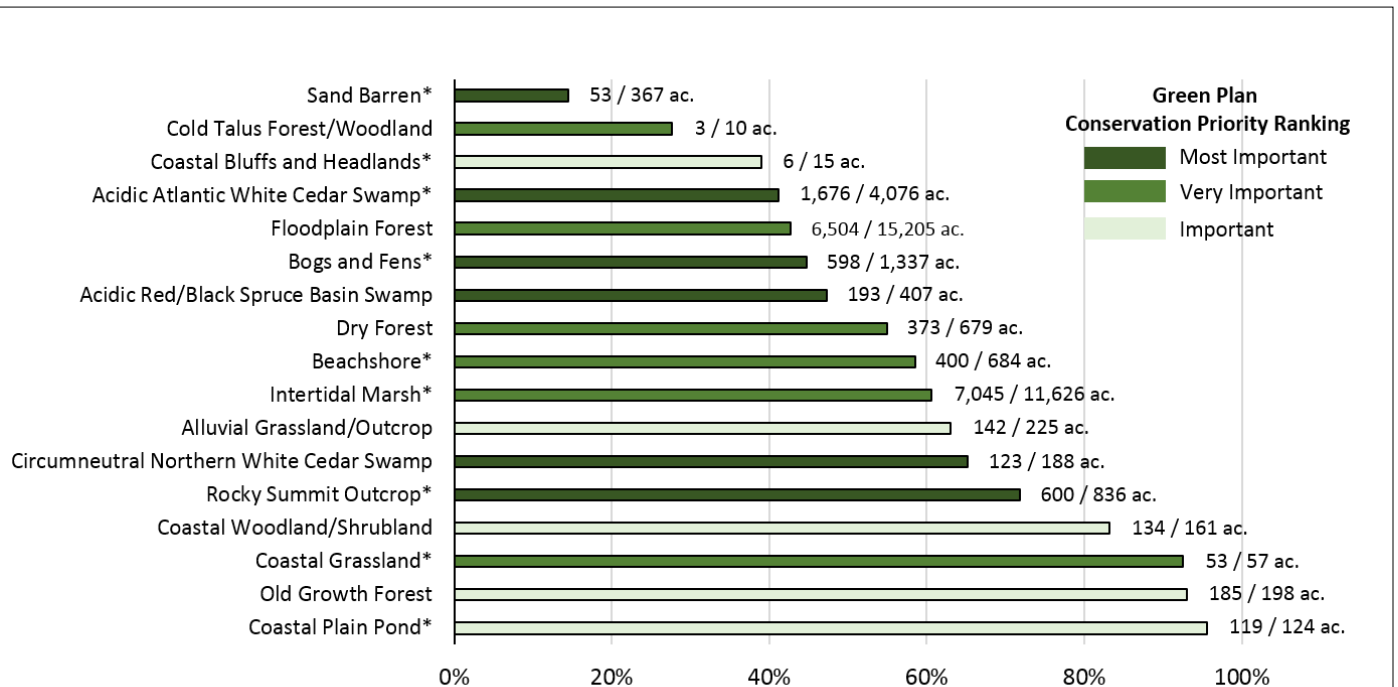


Figure 6. Estimated area of critical habitat types currently protected as open space by DEEP and its partners, and priority acquisition for conservation ranking for each habitat type. Each habitat is followed by the proportion of total habitat area that is protected. * Indicates one of the 13 of the most imperiled habitats in the state.

Source: A summary analysis of DEEP’s 2009 Critical Habitats data layer and 2011 DEEP protected open space data layer.

To counter habitat degradation, fragmentation, and loss due to development, and to maintain or increase viable wildlife populations of greatest conservation need, project selection should also give priority to lands that serve to:

- Protect Federal or State Endangered, Threatened, or Special Concern species;
- Protect key habitats emphasized for acquisition in the [Connecticut Wildlife Action Plan](#), including grassland, cold water stream, head water, or inland wetland habitats, or buffers to climate change;
- Protect habitat corridors for species disproportionately affected by barriers and habitat fragmentation; or
- Expand the size of existing areas managed for natural heritage resources.

C.1.: Natural Heritage Resources		
<u>Actions</u>	<u>Actors</u>	<u>Target Goal</u>
1) Conserve critical and key habitats emphasized in the State WAP that meet objectives to protect greatest conservation need species.	<ul style="list-style-type: none"> • DEEP • Municipalities • NLCOs 	<ul style="list-style-type: none"> • 1,000 acres of fish and wildlife habitats protected. - 500 of which are critical habitats protected.

For more information on these topics see [Section V.A.](#) (Fish and Wildlife Habitat).

C.2.: Five-year Funding Needs to Reach Acquisition Goals						
Total Acres Fish and Wildlife Habitat	DEEP Acquisition (Acres)	Partner Acquisition (Acres)	Total Acquisition Costs*	DEEP Cost Share	Partner Cost Share	DEEP Grant Share
1,000	750	250	\$7,645,000	\$5,733,750	\$955,625	\$955,625
	(75% of Total)	(25% of Total)		(75% of Total Cost)	(12.5% of Total Cost)	(12.5% of Total Cost)

* based on the average per acre cost of \$7,645 for properties acquired under the State Recreation and Natural Heritage Trust Program between 2007 and 2013.

D. Natural Resource-based Outdoor Recreation

Over the next five years, DEEP and its Partners should acquire 4,500 acres and 10 miles of water access that serve to provide statewide multiple outdoor recreational opportunities.

One of the highest goals of the State's Green Plan strategy is to bring people of all ages, abilities, and socio-economic makeups onto open space and into nature.

It is important to ensure the public has adequate, equal opportunities to participate in fishing, hunting, wildlife-viewing, and other passive, natural-resource based outdoor activities on open space funded with state conservation dollars.

Every year, DEEP invites children and families to many of its Parks, Forests, and Wildlife

Management Areas through [No Child Left Inside®](#) environmental education programs. DEEP's [Urban Green and Community Gardens grant program](#) also helps to bring open space features to city populations in need of local outdoor places to learn, play, and grow fresh foods.

In order to expand opportunities for residents to enjoy natural-resource outdoor recreation over the next five years, interim goals for the State include:

- 20 State Urban Green and Community Gardens grants awarded to create new or enhance existing outdoor open spaces in urban communities;
- 2,500 acres added to State Park, Forest, and Wildlife Management Areas;
- 7 new water bodies open for public boating, fishing, and/or swimming;

Green Plan Target

Over the next 5 years:

- Award **20 State Urban Green and Community Garden grants** to create or enhance urban open spaces;
- Open **7 new water bodies** and **10 miles** of river and stream for public fishing and other uses;
- Protect **2,000 acres** that *close gaps in the state's major recreational trails*;
- Open an additional **2,300 acres** to public hunting to *expand the current area available by 1%*;
- Add **2,500 acres** to the State's system of Parks, Forests, and Wildlife Management Areas.

- 10 miles of new river and stream access opened to public fishing;
- 2,000 acres protected that close gaps in the state’s major recreational trails;
- 2,300 acres opened to public hunting through new acquisitions to expand the current area available by about one percent;

In its effort to welcome into its recreational opportunities people of all abilities, DEEP will comply with relevant state and federal disability rights laws. In accordance with all state and federal law, partner projects providing urban garden and recreational opportunities should also provide maximum access to people with disabilities.

Project & Funding Selection

To strategically meet community demands for passive outdoor recreation activities, and effectively steward lands for such purposes, project and funding selection should give priority to lands:

- In close proximity to densely populated areas;
- Capable of providing multiple recreational activities of significant demand or unmet need as identified in the Connecticut [Statewide Comprehensive Outdoor Recreation](#) and/or [Coastal and Estuarine Land Conservation Program](#) Plans;
- Expanding or protecting sections of the state’s major recreational trail networks including such trails as: the East Coast Greenway, Farmington River, and Farmington Canal Heritage Trails, Hop River, Air Line, Moosup, Quinnebaug River, or Larkin Trails, or the Blue-Blazed Hiking Trails;
- Closing in-holdings or expanding State Park, Forest, or Wildlife Management Areas; or
- Providing public access to the state’s Wild & Scenic Rivers or Connecticut River National Blueway.
- DEEP and its partners should also coordinate brownfields remediation projects to include public recreational trail use along Connecticut’s major rivers.

D.1.: Natural Resource-based Outdoor Recreation		
<u>Actions</u>	<u>Actors</u>	<u>Target Goal</u>
1) Enhance urban community access to local open space.	<ul style="list-style-type: none"> DEEP Municipalities NLCOs 	<ul style="list-style-type: none"> 20 State Urban Green and Community Garden grants awarded.
2) Meet currently underserved demand for recreational activities identified in the State's SCORP and CELCP Plans.		<ul style="list-style-type: none"> 7 new water bodies opened to the public. 2,500 acres added to State Parks, Forests, and Wildlife Management Areas.
3) Expand sections of the state's major recreational trail networks.		<ul style="list-style-type: none"> 2,000 acres protected to close gaps in the state's major recreational trails.
4) Expand public fishing opportunities.		<ul style="list-style-type: none"> 10 new miles of river and stream opened to public fishing.
5) Expand public hunting opportunities.	<ul style="list-style-type: none"> DEEP 	<ul style="list-style-type: none"> 2,267 new acres opened to public hunting.

For more information on these topics see [Section IV](#) (Land Conservation Partners and Programs), [Section V.C.I.](#) (Outdoor Recreation Needs), and [Section V.D.](#) (Open Space in Urban Communities).

D.2.: Five-year Funding Needs to Reach Acquisition Goals						
Total Acres Natural Resource and Recreation Lands Held by DEEP	DEEP Acquisition (Acres)	Partner Acquisition (Acres)	Total Acquisition Costs*	DEEP Cost Share	Partner Cost Share	DEEP Grant Share
	2,500	0	\$19,112,500	\$19,112,500	\$0	\$0
	(100% of Total)			(100% of Total Cost)		
Total Acres Trails**	500	1,500	\$15,290,000	\$3,822,500	\$5,733,750	\$5,733,750
	(25% of Total)	(75% of Total)		(25% of Total Cost)	(37.5% of Total Cost)	(37.5% of Total Cost)

* based on the average per acre cost of \$7,645 for properties acquired under the State Recreation and Natural Heritage Trust Program between 2007 and 2013.

** based on the typical width of trails of 300 feet

Program Administration Priorities

Set in order to make progress towards the Green Plan’s land acquisition goals, the State’s highest program administration priorities are detailed in the next five sections. Taking the steps in the following sections will effectively increase land acquisitions for conservation and provide all people of ages, abilities, and backgrounds with access to open space recreation.

As with the State’s land acquisition priorities, actions taken to achieve one administrative objective can contribute to achieving those for others. DEEP is the lead participant for all of these administrative objectives, though the Department relies on its partners for support, including other State agencies, municipalities, environmental planning associations and commissions, and non-profit land conservation organizations (NLCOs).

1. Strategize Acquisitions for Climate Change Resiliency

Over the next five years, DEEP will plan for and prioritize the protection of lands for open space that adapt natural resources for impacts from climate change.

By actively viewing land acquisitions through a climate change lens, the Green Plan enables DEEP and its partners to take on an adaptive approach to protect the state's natural and recreational resources from impacts such as sea-level rise, extreme weather events, and shifts in habitats and species communities.

To maintain long-term ecosystem resiliency, DEEP will update its land acquisition and open space grant programs project selection processes to include the evaluation for lands most at-risk of impacts from climate change.

Updated State project selection criteria will include priorities for lands such as those identified in the State's [Climate Change Preparedness Plan](#) as having habitats at most risk from climate change, including the location of forested swamps, lands adjacent to freshwater and tidal wetlands, riparian lands adjacent to cold water streams, and beaches and dunes.

To help plan future acquisitions to include the conservation of lands most valuable for conservation purposes including climate change adaptation, DEEP will use key data sets in geographic information systems to identify and select key project alternatives.

For example, the Long Island Sound Sea-level Affecting Marsh Model (LIS SLAMM) models potential responses of Connecticut's tidal marshes to sea-level rise. The results of this

Green Plan Actions

To work towards adapting to climate change over the next 5 years, DEEP will:

- Include the **evaluation for lands identified as at most risk from climate change** in the State's land acquisition and open space grant programs selection process; and
- Identify and build **key data sets** needed to support statewide conservation planning for impacts due to climate change.

and other assessments of Connecticut coastal area response to sea-level rise will help DEEP identify areas adjacent to existing tidal marshes for conservation that could help sustain some of the ecological services currently provided by the state’s existing tidal marsh systems.

1: Strategize Acquisitions for Climate Change Resiliency
<u>Actions</u>
1) Include evaluation of lands identified as at most risk from climate change in the State’s land acquisition and open space grant programs selection process.
2) Collaborate with partners to identify and develop key data sets necessary to support climate resilience land conservation planning.

For more information on these topics see [Section II.E.](#) (Impacts by Climate Change) and [Section VI](#) (Identifying High Priority Lands for Conservation).

2. Build Partnerships and Public Support for Open Space

Over the next five years, DEEP will work with its land conservation partners to leverage resources and provide the public with comprehensive information on statewide open space.

Building Partnerships

All stakeholders working together towards a common goal is critical to achieving the most land conservation objectives over the next five years.

Cultivating meaningful partnerships among state and federal agencies, municipalities, regional councils of government, environmental planning associations, land trusts, and private companies and landowners will effectively leverage dollars, expertise, and other resources for open space protection.

One such important partnership is that which DEEP shares with the State's Natural Heritage, Open Space and Watershed Land Acquisition Review Board (Review Board)⁸. Over the next five years, DEEP will continue to work alongside the Review Board and should appoint additional members to fill vacancies.

Several times a year, the Review Board plays a supportive role in the State's open space programs by overseeing funding grant selection criteria, policies, and procedures, providing guidance and review of the Green Plan strategy, promoting public participation, and making recommendations to the Commissioner and General Assembly.

Green Plan Actions

To achieve more open space objectives over the next 5 years, DEEP will:

- Appoint members to fill vacancies on the **State's open space Review Board**;
- Enter into **10 agreements** under the **Cooperators provision** of the State's land acquisition program; and
- Encourage partners to participate in **regional conservation collaboration** initiatives.

⁸ (CGS) Sec. 7-131e(b)

1 Another way to build partnerships is accomplished under the Cooperators provision⁹ of
2 the State's Recreation and Natural Heritage Trust Program. Over the next five years, DEEP
3 should enter into at least 10 stewardship agreements with willing and eligible partners to reduce
4 acquisition and stewardship costs.

5 Designed to stretch state funding for new acquisitions and reduce stewardship costs, this
6 provision offers a mutual benefit between the State and one or more of its land conservation
7 partners. When the State and a partner (i.e., a municipality or land trust) have a common desire
8 to protect a certain property but either may not have the resources available to do so, the
9 Cooperators provision allows the State to enter into stewardship agreements between partners,
10 thus sharing the costs of acquisition and land management.

11 Similarly, to make the greatest impact possible with available resources, the
12 Department's partners should seek and explore participation in regional conservation initiatives.
13 Regions with active partnership programs are attractive candidates for funding from public and
14 private sources because they benefit from additional leverage in matching funds and local
15 influence.

16 For example, [Litchfield Hills Greenprint Collaborative](#), supported by the Housatonic
17 Valley Association, is a partnership of local land trusts and community leaders in 28 towns
18 across northwest Connecticut. To reach their goal of securing 150,000 acres of land for water,
19 farm, and forest protection, members of the Greenprint share tools and expertise to help improve
20 land conservation decisions.

21 Another, wider, regional collaboration is illustrated by the [Connecticut River Watershed](#)
22 [Landscape Conservation Design Pilot](#), facilitated by the U.S. Fish and Wildlife Service and

⁹ (CGS) Sec. 23-79

supported by the North Atlantic Landscape Conservation Cooperative. Led by a diverse team of federal and state agencies and private organizations working at various scales, this is an effort to strategically conserve large connected natural areas within the river’s 7 million-acre watershed.

2: Build Partnerships and Public Support for Open Space
<u>Actions</u>
<u>Building Partnerships</u>
1) Appoint members to fill vacancies on the State Natural Heritage, Open Space and Watershed Land Acquisition Review Board.
2) Enter into 10 stewardship agreements under the Cooperators provision of the State’s Recreation and Natural Heritage Trust Program to share acquisition costs with land conservation partners.
3) Promote the Cooperators provision of the State’s land acquisition program on DEEP’s open space webpage to inform partners on its purpose, benefits, and more.
4) Encourage State land conservation organizations to participate in regional conservation partnership initiatives to leverage, attract, and target resources.

For more information on these topics see [Section IV](#) (Land Conservation Partners and Programs).

Building Public Support

A strong outreach and education strategy is key to making the connection between the parks and lands the public enjoys and the importance of acquiring and protecting open space.

The more people that are involved in using and stewarding our open spaces, the more protection these lands will have and the more public support there will be for future initiatives.

Through the next five years, the Green Plan aims to provide the public with more information on open space protection, improve access to protected lands, and help to raise the next generation of open space stewards in Connecticut, with a special focus on urban areas.

For over 20 years, DEEP's [Office of Environmental Justice](#) has partnered with disability, youth, agricultural, and other community groups to raise awareness about urban environmental issues and public health concerns that disproportionately affect lower income and urban communities.

For example, supported by the Friends of Keney Park, DEEP's Environmental Justice program attracts and trains urban youth from Hartford, Bloomfield, and Windsor on topics such as wildlife habitat, trails stewardship, recycling, gardening, and more, using the nearly 700-acre Keney Park as an outdoor classroom.

Green Plan Actions

To provide the public with information about open space over the next 5 years, DEEP will:

- Explore ways to attract and train **youth and students** on open space and land acquisition programs;
- Partner with a **diverse array of community groups** in public open space initiatives;
- Inform the public on DEEP **open space lands and programs** online and in other materials for distribution; and
- Collaborate with partners to inform municipalities, land trusts, and water companies on the **Green Plan and the Land Registry**.

DEEP's Environmental Justice program also partners with the Parks Division to provide the youth with environmental education programming under the [No Child Left Inside®](#) initiative. Each summer, children from urban communities visit State Parks or Forests to learn about water, air, habitat, plants and animals, and more.

To attract the next generation of stewards for open space protection, DEEP and its land conservation partners should explore additional ways to encourage the youth and students from all backgrounds to visit protected lands and become trained in or involved with acquisition programs. A diverse array of community groups, such as universities and town recreation, open space, and conservation commissions, can become partners in encouraging program exploration and involvement.

To inform all members of the public over the next five years, DEEP will work with its community partners to distribute information on state open space lands and programs. To make it easier for the public to find and recreate on open space purchased using State conservation funding, DEEP will highlight publicly-accessible protected lands on its webpage. In its effort to welcome into its recreational opportunities people of all abilities, DEEP will also make available information on open space elements for disabled persons.

DEEP will develop educational materials about state open space and programs for distribution to residents at town hall and other related public facilities to complement its webpage resources. All DEEP-published internet materials will be made accessible to people with disabilities, and hard copy materials will be made available in alternative format upon request.

Maps and tools that show the location of statewide public open spaces, such as the Public Open Space Mapping [datalayer](#) on [Connecticut Environmental Conditions Online](#), are currently

1 available to the public for viewing and [downloading](#). Since becoming available on DEEP’s open
2 space webpage in early 2015, the Public Use and Benefit Land Registry (Land Registry) pilot
3 project can also serve to locate public open space.

4 Educating DEEP’s land conservation partners –municipalities, land trusts, and water
5 companies –about the importance, utility, and function of the Green Plan and the Land Registry
6 will be critical to improving the accuracy of information on state open space. This will be best
7 achieved through a collaborative effort among DEEP, the [Connecticut Land Conservation](#)
8 [Council](#), and other statewide associations and non-profit organizations.

2: Build Partnerships and Public Support for Open Space	
<u>Actions</u>	
<u>Building Public Support</u>	
1)	Explore ways to attract and train the youth and students, especially from urban areas, on open space protection and acquisition programs.
2)	Partner with traditional and non-traditional community groups in public open space initiatives, including disability, youth, urban, university, municipal, and others.
3)	Inform the general public and others on DEEP publicly-accessible open space lands and acquisition programs on its webpage and in materials for distribution.
4)	Collaborate with partners to inform municipalities, land trusts, and water companies on the Green Plan and the Land Registry to increase open space information accuracy.

For more information on these topics see [Section IV](#) (Land Conservation Partners and Programs) and [Section V.D.](#) (Open Space in Urban Communities).

3. Improve Open Space Data and Tools

Over the next five years, DEEP will launch and enhance a statewide land registry pilot, improve state open space data, and use data to make better land protection decisions.

Maintaining accurate data on statewide protected open space is necessary to assess progress on Connecticut's goals, strategically plan future acquisitions, and provide the public with information on the lands they are entitled to enjoy.

To help meet this challenge, DEEP established the Public Use and Benefit Land Registry (Land Registry)¹⁰, a pilot mapping system that will inventory and eventually show all existing protected open space in Connecticut.

Developed in relation with other statewide geographic data, the Land Registry gathers data to assist in planning for what areas DEEP would like to conserve in the future.

Another purpose of the Land Registry is to ensure that the public is informed of what lands have been protected and why those lands have been acquired. The mapping system allows users to browse state lands, determine property

Green Plan Actions

To improve open space data and tools over the next 5 years, DEEP will:

- Launch and populate the **state's Land Registry** pilot (CGS Sec. 23-8e);
- Produce a **map layer of all projects funded to date** under DEEP's open space grant program;
- Require applicants to the State's open space grant program to submit **digital versions of surveys**;
- Evaluate a means for land conservation partners to **voluntarily submit data** to DEEP (CGS Sec. 23-8b(2));
- Collaborate with partners to inform **municipalities, land trusts, and water companies** on the Land Registry;
- Identify and build **key datasets** needed to support statewide conservation planning; and
- Evaluate the use of a **statewide priority acquisition mapping tool**.

¹⁰ (CGS) Sec. 23-8e

ownership, and research, view, and download copies of parcel information, including deeds, surveys, and land management plans.

Starting with three State Parks, over the next five years DEEP will launch and develop the Land Registry for the State, its partners, and the public to use in assessing open space. The registry will be populated with information on other DEEP lands and, in the future, on open space lands held by other state agencies, all projects partially funded by State open space grants, municipalities, and land conservation organizations.

Following uniform standards and practices, documents related to DEEP's ownership of property within the state are recorded in the agency's unit of Land Acquisition and Management and are then scanned into the Land Registry's computer database. To help make this process more efficient and to improve this dataset for users, DEEP should consider requiring recipients of funding from the State's open space grant program to submit digital versions of property surveys.

Populating the Land Registry with open space data will be a great task and requires the cooperation of many parties. To increase the accuracy of the estimated area of statewide open space, DEEP will evaluate establishing a system that encourages the voluntary submittal of information regarding new acquisitions by its partners¹¹. An example of such a system could include a standardized form that can be filled out by Towns and returned to DEEP for input into the Land Registry.

As stated [in the previous section](#), educating DEEP's land conservation partners about the importance, utility, and function of the Land Registry and any voluntary data submittal system will be critical to improving the accuracy of information on state open space. This will be best

¹¹ (CGS) Sec. 23-8b(2)

1 achieved through a collaborative effort among DEEP, the State’s Natural Heritage, Open Space
2 and Watershed Land Acquisition Review Board, the Connecticut Land Conservation Council,
3 and other organizations.

4 The Land Registry will serve as one of many tools the State, its partners, and the public
5 can use in assessing lands for the acquisition of new open space. The acquisition of lands for
6 open space conservation purposes is strategically improved by assessing lands in relation to
7 multiple geographic datasets.

8 Over the next five years, DEEP should collaborate with its land conservation and other
9 partners to identify and build key spatial data sets that enable the state to evaluate and prioritize
10 the acquisition of lands having more critical environmental and recreational resources. This is
11 especially important for planning ahead for new acquisitions that will best protect the
12 environment from impacts predicted due to climate change.

13 Some non-profit land planning organizations take this approach one step further by
14 spatially analyzing data sets to target lands of highest value for conservation, using geographic
15 information systems (GIS) to combine ecological datasets and create a tool that identify more
16 discrete acquisition focus areas still in non-conservation forms of ownership. These tools focus
17 only on specific regions of the state, and the resultant maps enable partners to make better
18 decisions about land protection.

19 For example, the [Lower Connecticut River and Coastal Region Land Trust Exchange](#)
20 (LTE) is an informal collaboration of 14 land trusts representing 17 communities of its
21 coordinating organization, the Lower Connecticut River Valley Council of Governments. The
22 LTE performed an overlay analysis in GIS to produce a natural resource-based Strategic
23 Conservation Plan for its region.

Over the next five years, DEEP should evaluate the establishment of a publicly-accessible, statewide land acquisition priority mapping decision support tool. The tool could use a criteria scoring system similar to that used in the [2015 CELCP Plan](#) to proactively identify specific areas statewide that represent concentrations of higher conservation value warranting additional investigation as potential acquisition targets, as well as providing consideration for lands that offer important outdoor recreational opportunities.

3: Improve Open Space Data and Tools	
<u>Actions</u>	
1)	Launch the Public Use and Benefit Land Registry pilot (Land Registry) with three State Parks for use by DEEP, its partners, and the public in assessing existing protecting lands (CGS Sec. 23-8e).
2)	Continue to develop the Land Registry by populating with information on other DEEP-owned lands, other State lands, parcels funded partially by DEEP open space grants, and lands owned by conservation partners.
3)	Evaluate a means to improve the accuracy of the Land Registry data and for land conservation partners to voluntarily submit data to DEEP (CGS Sec. 23-8b(2)).
4)	Collaborate with partners to inform municipalities, land trusts, and water companies on the Land Registry to increase open space information accuracy.
5)	Require recipients of funding from the Open Space and Watershed Land Acquisition Grant Program to submit digital versions of property surveys for records filing and entry into the Land Registry.
6)	Collaborate with partners to identify key datasets that should be used to evaluate lands for conservation, including datasets related to impacts from climate change.
7)	Evaluate the establishment of a publicly-accessible, statewide land acquisition priority mapping tool for use by DEEP and others to make better land conservation decisions.

For more information on these topics see [Section II.F.](#) (Data Needs for Open Space Planning) and [Section IV.A.II.](#) (Unique Land Conservation Partnership Examples).

4. Develop Strategies for Preserving in Perpetuity State-owned Lands of High Conservation Value

Over the next five years, DEEP will work with other state agencies to identify lands of high conservation value for potential preservation or protection as open space.

The State of Connecticut, through its multiple State agencies, owns areas of undeveloped lands that have high conservation value and may be beneficial additions to the State's portfolio of open space. DEEP is required to establish a process by which each State agency may identify and potentially protect in perpetuity state-owned lands that are valuable for conservation purposes or public use and benefit¹².

Lands of public use and benefit include those lands that would be valuable for conservation, public enjoyment, recreational purposes, or any activity associated with improving or maintaining such purposes. Lands of high conservation value are defined by DEEP as those that meet at least one of the land acquisition priorities identified in this Plan.

To begin establishing this process, over the next five years DEEP will use state lands inventories to assess lands under custody and control of all state agencies. DEEP will assess undeveloped or primarily natural lands to determine if these lands could be considered lands of high conservation value or if they could serve a public use or benefit.

Next, DEEP would work with agencies that have custody of such lands of high conservation value to understand their present and future operational needs for these lands. If agencies identify no or low business needs for such lands, DEEP would work with that agency and the State Office of Policy and Management to propose a means to add these lands to the State's open space portfolio.

¹² (CGS) Sec. 23-8d and e

In establishing State-owned lands of high conservation value as open space, DEEP's priority is to permanently protect these state lands as protected open space. If this is not feasible, given the needs of the agency currently managing such lands, DEEP will work to preserve these lands of high conservation value as preserved open space.

In addition to working with other State agencies to move new lands to open space uses, DEEP will evaluate the protection of its open space. DEEP's system of Parks, Forests, and Wildlife Areas contains certain lands that can be considered protected open space. Other lands, while meeting the definition of preserved open space, may not have protection that secure the lands as open space in perpetuity.

To address this risk to the public's system of State-owned open space, DEEP will work to develop several options that can be deployed to permanently protect DEEP open space. Such options will be discussed with the State's Natural Heritage, Open Space and Watershed Land Acquisition Review Board and the Council for Environmental Quality.

4: Develop Strategies for Preserving in Perpetuity State-owned Lands of High Conservation Value

Actions

- 1a) Assess state property that is not protected in relation to existing protected lands and natural landscape features using GIS mapping tools.
- 1b) In consultation with other State agencies, implement a process to determine if lands held by each agency may be valuable for conservation or public recreational purposes.
- 1c) Work with OPM and State agency owners of lands of high conservation value to add such lands to the State's system of preserved or protected open space.
- 2) Propose a means in which DEEP may prioritize and protect in perpetuity state-owned lands that are both not needed for agency business purposes and best enhance conservation and public use and benefit purposes.

5. Optimize State Open Space Acquisition and Grant Program Operations

Over the next five years, DEEP will address State open space program processes to improve acquisition planning, performance, and partnerships.

Making DEEP land acquisition program operations more efficient while maintaining agency environmental standards is key to effectively protecting quality lands for public open space, assisting the State's partners in achieving Connecticut's open space goals, and addressing new environmental challenges as they arise.

Over the next five years, DEEP will undertake a number of actions to address State open space processes and improve acquisition planning, performance, and partnerships.

To ensure consistency with the objectives in this Plan, DEEP will review and update its standardized open space acquisition policies and procedures set under both the Recreation and Natural Heritage Trust and the Open Space and Watershed Land Acquisition Grant Programs.

Each year, DEEP submits a report on the Green Plan and the progress made towards the state's open space goals to the Environmental Committee of the General Assembly. Over the

Green Plan Actions

To optimize programs over the next 5 years, DEEP will:

- Review and update DEEP's open space program procedures to **ensure consistency with the revised Green Plan**;
- Expand DEEP open space annual reports to include a **progress assessment on Green Plan objectives**;
- Engage the State's open space Review Board and all land conservation partners in **updating the Green Plan** in 5 years ((CGS) Sec. 23-8b);

next five years, DEEP will also enhance its open space reports to assess progress towards recommendations in the Green Plan. Current and past monthly and annual state open space reports are available [online](#). If major new initiatives or changes to existing programs occur, DEEP may also provide an annual update to the Green Plan.

Considering the current and future needs and concerns of Connecticut’s environmental and recreational resources, the Green Plan is the State’s detailed open space strategy. In drafting the next five-year plan update¹³, DEEP will again seek guidance and

review from the State’s Natural Heritage, Open Space and Land Acquisition Review Board (Review Board) and all other land conservation stakeholders to provide a revised action strategy aimed at the protection of Connecticut’s best remaining and most at-risk lands.

Operating successful State open space programs and achieving Connecticut’s total open space goal depends on implementing a detailed strategy on how to best fulfill this goal, as well as securing an adequate level of resources that allows lands to be purchased in an effective and efficient manner to reach the goal.

Green Plan Actions (cont.)

- Update Green Plan annually, if major changes are needed.
- Promote the **Cooperators provision** of the State’s land acquisition program;
- Apply for **federal assistance** and explore **regional conservation partnerships**;
- Provide **consistent and predictable funding grant rounds** to land conservation partners each year;
- Work closely with the State’s open space Review Board to **streamline open space grant program practices**; and
- Develop a **preliminary project review sheet** for open space grant applicants.

¹³ (CGS) Sec. 23-8b

1 To accelerate acquisition efforts by leveraging state conservation funding over the next
2 five years, DEEP will promote cooperative acquisitions between its land conservation partners,
3 seek and apply for federal land acquisition assistance, and explore opportunities to participate in
4 regional conservation partnerships across southern New England.

5 Acquiring open space on a statewide scale for public purposes can also be time-
6 consuming, which can threaten protection of key lands facing high development pressures or
7 other factors resulting in lost opportunities. In order to provide its land conservation partners
8 with more consistent and predictable funding assistance, DEEP has committed to opening an
9 annual grant round on or about September 15 each year. To enable its partners to make more
10 strategic decisions, DEEP will continue to announce grant rounds each year, at the same time of
11 year.

12 To minimize overall grant processing time and to ensure available state funding is
13 allocated as expeditiously as possible, DEEP will work closely with the Review Board to
14 evaluate open space grant funding criteria, policies, and procedures. With the Board's
15 assistance, DEEP can identify and revise unnecessary, redundant, or inefficient steps in the grant
16 application and award process.

17 At the announcement of new open space grant rounds, DEEP receives a moderate amount
18 of questions from its eligible partners about whether a project of interest would score high in the
19 competitive grant selection process. To simplify information requests to DEEP and facilitate
20 better decision making by its partners, DEEP will develop a basic, preliminary project review
21 sheet for DEEP's partners. To be made available on the Department's webpage, the sheet could
22 provide applicants with basic information on the program's objectives and selection criteria.

Within existing resources, improvement in DEEP land acquisition and open space grant program operations can occur. However, funding, personnel, training, and equipment are required to administer these programs and purchase lands in an effective and efficient manner. DEEP will make every effort within budget and staff limitations to improve its programs with a focus on achieving the Green Plan’s open space objectives.

5: Optimize State Land Acquisition and Grant Program Operations	
<u>Actions</u>	
1)	Review and update the State’s standardized land acquisition and open space grant program procedures to ensure planning consistency with the revised Green Plan.
2)	Every five years develop a comprehensive strategy plan that engages all statewide land conservation partners in open space protection ((CGS) 23-8b).
3)	Enhance DEEP open space annual reports to include progress assessments towards objectives made in the revised Green Plan.
4)	Promote the Cooperators provision of the State’s land acquisition program on DEEP’s open space webpage to inform partners on its purpose, benefits, and more.
5)	Apply for federal land acquisition funding assistance and explore participation in regional conservation partnerships to leverage state conservation dollars.
6)	To enable more strategic decision making, provide DEEP’s land conservation partners with State open space grant rounds each year, at the same time of year, regardless of the timing of State bonding.
7)	Work closely with the State’s Natural Heritage, Open Space and Watershed Land Acquisition Review Board to streamline DEEP grant funding criteria, policies, and procedures.
8)	Develop a basic, preliminary project review sheet for DEEP’s partners to use in reviewing whether a project of interest would score high in competitive grant awarding.

For more information on these topics see [Section IV](#) (Land Conservation Partners and Programs).

I. Green Plan Background & Purpose

Recognizing the threat of loss of environmental resources to changes in land use, in 1997 the General Assembly set an ambitious goal of protecting 21 percent of Connecticut’s land by year 2023 for public open space¹⁴. With a total of 3,205,760 acres in Connecticut, 673,210 acres must be protected to meet this goal.

The State policy set in 1997 to protect open space in Connecticut is as true today as it was almost two decades ago. Progress has been made on acquiring land for open, but critically-important conservation and recreation lands remain at risk to being lost to development. DEEP and its conservation partners must evaluate remaining lands in Connecticut and prioritize the preservation or protection of the lands of highest conservation and recreation value.

The Legislature, when drafting the open space acquisition goals, set targets for the State, acting primarily through DEEP, and DEEP’s conservation partners (municipalities, private non-profit land conservation organizations, and water companies whose lands are considered Class I and II water company lands):

- 10% (or 320,576 acres) is to be acquired and held by the State of Connecticut, and
- 11% (or 352,634 acres) is to be acquired and held by land conservation partners.

In order to protect natural heritage and recreation lands for future citizens of the State of Connecticut, DEEP and its partners must coordinate efforts. Certain lands may be best-suited for DEEP management and others may be best-suited for management by a conservation partner. Regardless of ownership, all parties must work together to protect the eco-system and social benefits provided by open space.

¹⁴ (CGS) Sec. 23-8b

1 While many groups and individuals support the acquisition and protection of open space,
2 there is little clarity on what constitutes open space. The term “open space” is defined in
3 Statute¹⁵ in context of the tax abatement program commonly referred to as “PA-490.” For the
4 purpose of implementing the conservation efforts outlined in the Green Plan, the following
5 adaptation of the PA-490 definition of open space is provided:

OPEN SPACE

Any area of land, including forest land, land designated as wetland under section 22a-30 and not excluding farm land, the preservation or restriction of the use of which would (A) maintain and enhance the conservation of natural or scenic resources, (B) protect natural streams or water supply, (C) promote conservation of soils, wetlands, beaches or tidal marshes, (D) enhance the value to the public of abutting or neighboring parks, forests, wildlife preserves, nature reservations or sanctuaries or other open spaces, (E) enhance public recreation opportunities, or (F) preserve historic sites.

6
7 Open space does not mean undeveloped natural land or land with an unofficial passive
8 recreational use. For land to be termed “open space,” it must be preserved or protected for open
9 space use. The Green Plan provides strategies for the preservation and the protection of open
10 space. These terms are not used interchangeably in this plan.

PRESERVED OPEN SPACE

Any area of land that has been acquired and is used for open space purposes.

Includes DEEP’s State Parks, State Forests, and Wildlife Areas.

PROTECTED OPEN SPACE

Any area of land with a restriction that would limit its use to open space.

Includes lands subject to conservation restrictions, deed restrictions, or certain reserved rights.

¹⁵ (CGS) Sec. 12-107(b)(c)

When the State measures its success toward reaching the collective open space acquisition goals, only preserved or protected open space is measured. As of December 2015, DEEP held an estimated 257,616 acres, or 80 percent, of the target for State open space acquisition. DEEP's land conservation partners held a conservatively estimated 243,714 acres, or 69 percent, of the target for partner open space acquisition. This accounts for a total of 501,330 acres, or about 15 percent of Connecticut's land area held as open space. Overall, Connecticut is 74 percent of the way toward achieving its total open space preservation goal.

The Connecticut Comprehensive Open Space Acquisition Strategy (Green Plan) is a statewide planning document developed by DEEP in partnership with municipalities and numerous conservation organizations to guide land acquisitions towards achieving the state's open space goal. Considering the needs and issues facing the state's residents and environmental resources, the Green Plan:

- Discusses the purpose of, need for, and threats to land conservation in the state;
- Provides an estimate of the acres of land protected by the State and its partners;
- Discusses a system for increasing the accuracy of open space lands;
- Describes the highest priorities for acquisition of land identified to be in greatest need for immediate preservation and the general location of each priority;
- Provides timetables for the acquisition of land by the State and plans for management of such land; and
- Lists Connecticut open space resources to be used for acquisition and management of such land¹⁶.

The first Green Plan was prepared in 2001 and was last revised in 2007. Since 2007, two Public Acts¹⁷ have expanded the scope of the Plan and require that it be updated every five years. The Plan includes three new components that relate to protected open space in the state: the [Public Use and Benefit Land Registry](#), the identification of the State's highest priority potential

¹⁶ (CGS) Sec. 23-8b

¹⁷ P.A. Nos. [12-152](#) and [14-169](#)

1 acquisitions, and the establishment of a process to protect currently unprotected State-owned
2 lands.

3 In updating the Green Plan, DEEP requested assistance from groups throughout the
4 agency and other state agencies, the State's Natural Heritage, Open Space and Land Acquisition
5 Review Board, and conducted outreach with regional councils of government, the land trust
6 community, and water companies (Appendix C). The result of this inclusive, interdisciplinary
7 process is a land acquisition priority framework that is integrated with the ecological values and
8 public use needs identified by key state stakeholders.

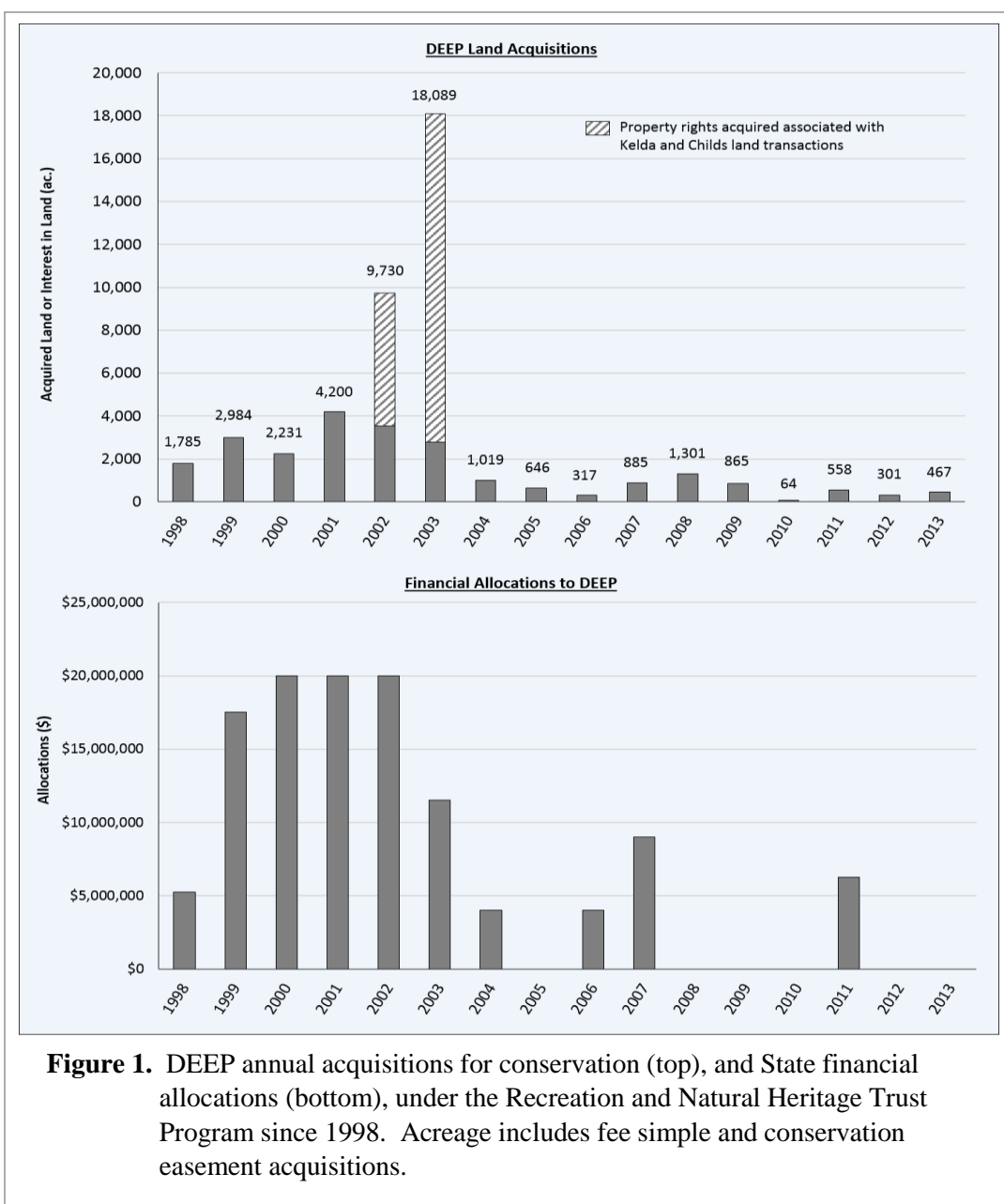
9 10 A. Goals and Measures of Success

11 Through year 2020, the State and its land conservation partners should target to acquire a
12 total 11,500 acres as open space: 5,550 acres (48 percent) to be acquired by DEEP and 5,950
13 acres (52 percent) to be acquired by its partners. Table 1 below lists the conservation focus areas
14 in which DEEP and its partners should direct open space acquisition efforts, based on the highest
15 priority lands detailed in the [5-year action strategy section](#) of this plan.

16 The acreage goals for conservation focus areas were derived by calculating the land
17 needed to increase land holdings by a certain percentage, where current metrics are available.
18 This percent increase relies on an understanding of the area of lands across the state that are
19 either currently held in protective forms or that remain unprotected and undeveloped. DEEP
20 used the current and best data available to set these acreage targets that comprise the total five-
21 year acquisition goal.

Table 1. Conservation Focus Areas for land acquisition or protection by DEEP and its partners through 2020.			
Conservation Focus Area	Target Acres	DEEP Acquisitions (Acres)	Partner Acquisitions (Acres)
Watershed Lands	5,000	1,500	3,500
		<i>(30% of Focus Area Total)</i>	<i>(70% of Focus Area Total)</i>
Coastal Lands	1,000	300	700
		<i>(30% of Focus Area Total)</i>	<i>(70% of Focus Area Total)</i>
Natural Heritage Resources	1,000	750	250
		<i>(75% of Focus Area Total)</i>	<i>(25% of Focus Area Total)</i>
Other Natural Resource and Recreation Lands Held by DEEP	2,500	2,500	0
		<i>(100% of Focus Area Total)</i>	
Recreational Trails	2,000	500	1,500
		<i>(25% of Focus Area Total)</i>	<i>(75% of Focus Area Total)</i>
Totals	11,500	5,550	5,950

These acquisition targets set for DEEP and DEEP's land acquisition partners are not ideal and do not keep the state on track to meeting its overall open space goal by 2023, but declining State, municipal and private resources and acquisitions rates show that they are a stretch but possibly attainable. DEEP has only acquired about 3,556 acres, or 711 acres each year, between 2008 and 2013 (Figure 1). The most acquisitions were made in 2001, the same year the statutory goal to protect 21 percent of the state was established and financial allocations to DEEP for land acquisition were at peak. With this new Green Plan, it is anticipated that efforts and outcomes will increase.



B. Consistency with State & Local Plans of Conservation and Development

The State's [Conservation and Development Policies Plan](#)¹⁸ serves as a statement of the development, resource management, and public investment policies for Connecticut. The State

¹⁸ (CGS) Sec. 16a-24 through 16a-33

Office of Policy and Management is required by statute to prepare this plan on conservation and development on a recurring five year cycle.

The efforts of DEEP and the Green Plan to acquire, preserve, and manage open space for clean waters, public health protection, resilient coastal resources, scenic highland areas, fish and wildlife habitat, universally-accessible outdoor public recreation areas, and other resources are consistent with the policies under the current Conservation and Development Policies Plan (Appendix F).

The Conservation and Development Policies Plan specifically calls on state agencies and municipalities to facilitate the expansion of open space through the acquisition of lands and implementation of open space priorities as defined in this Green Plan. To maintain consistency with the State's conservation priorities and increase the likelihood of being awarded a DEEP open space grant, municipalities and other land acquisition partners are encouraged to generate their plans of conservation and development guided by the Green Plan.

C. Recent Achievements in Connecticut Land Conservation

Since the Green Plan's last revision in 2007, DEEP and its land conservation partners continue to enhance conservation efforts statewide.

- With the assistance of bond funding, DEEP's land acquisition and open space grant programs have helped the State and its partners move closer to reaching their total open space goals. Between 2007 and 2015, more than 18,000 acres were acquired or protected under these programs (Appendix A and B).

Nearly 13,000 acres were protected under the [State Open Space and Watershed Land Acquisition Grant Program](#), funding 201 projects in over 50 towns. Many of these grant awards funded the protection of open space located in or near more densely populated areas, thereby providing urban communities greater access to greenspaces.

- 1
- 2 • In the face of an on-going State budget deficit, DEEP has worked to build a list of state,
- 3 federal, municipal, and private partners with which it leverages limited resources. The
- 4 Francis M. Deluca Property in Canaan and Cornwall is an example of a successful
- 5 collaboration to protect a large block of forest for conservation and public recreation.

6 The 308-acre Deluca property was purchased in 2008 for \$3.3 million and acquired as

7 an addition to the Housatonic State Forest: \$492,750 from a federal [Highlands Conservation](#)

8 [Act](#) grant, \$100,000 from the Cornwall Conservation Trust, and the remaining balance

9 provided from the [State Recreation and Natural Heritage Trust Program](#).

- 10
- 11 • A new initiative started in 2013 with DEEP partnering with the University of Connecticut to
- 12 produce a publicly accessible GIS map layer of all projects funded to date under the State
- 13 Open Space and Watershed Land Acquisition Grant Program. Currently undergoing quality
- 14 assurance and control, this map layer will improve public access to approximately 30,000
- 15 acres of open spaces yet to be shown on any state-level mapping. This massive new dataset
- 16 will assist future evaluation of open space protection by all.
- 17
- 18 • In 2013, DEEP worked with Eversource Energy (formerly Northeast Utilities) to extend a
- 19 Memorandum of Understanding through year 2024 that gives DEEP, municipalities, and land
- 20 trusts the right of first refusal to acquire parcels on “the Conservation List” should
- 21 Eversource put them on the market for sale. The list consists of nearly 375 parcels in 90
- 22 municipalities totaling approximately 9,500 acres identified by DEEP as having high value
- 23 for public recreation, natural resource conservation and ecological preservation.

24 The MOU was extended for another decade through 2024 as a part of the State’s

25 settlement of the NU-NSTAR merger. The settlement also formed the [Eversource Land](#)

26 [Trust](#), which in 2013 permanently protected 4 parcels totaling 987 acres from the

27 Conservation List (Table 2).

1
2

Table 2. Conservation List lands protected by the NU Land Trust in 2013.		
Property Name	Town	Acres
Skiff Mountain	Sharon	800
Kings Island	Enfield	120
Hanover Road	Newtown	54
Bartlett Cove	Waterford	13
Total Acres		987

II. Land Protection Challenges in Connecticut

The progress DEEP and its partners have made towards reaching Connecticut's open space goal has not been made without difficulties. Threats continue to exist to acquiring lands for open space and public benefit and to already-dedicated open spaces.

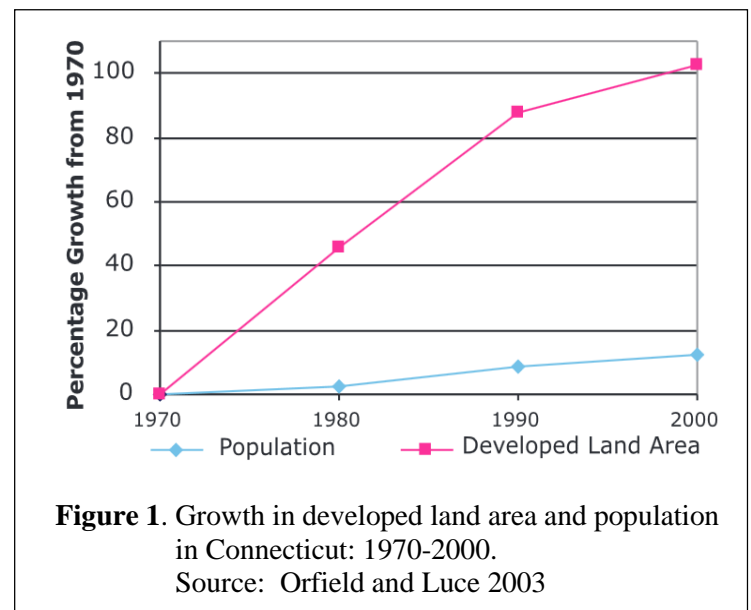
A. Economic and Development Pressures

Perhaps the greatest challenge to the conservation of land as open space is economic and land development pressures. Because economic incentives to develop land can far outweigh those from conservation purposes, private landowners can be pushed to convert their lands to uses incompatible with open space uses.

Sprawl development has already impacted statewide environmental and natural resources. A rapid growth of development since the 1970's facilitated a shift of people living in urban centers to suburban areas (Figure 1).

As a consequence of such growth, from 1985 to 2010, Connecticut lost 180 square miles (115,200 acres) of forested land

and 62 square miles (39,680 acres) of agricultural fields to development¹⁹ and related land covers (Figure 2).



¹⁹ “Developed” is defined by the [UConn Center for Land Use Education and Research](#) as built areas typically associated with commercial, industrial, and residential uses containing impervious surface such as roads, parking areas, and structures and also includes maintained turf/grass.

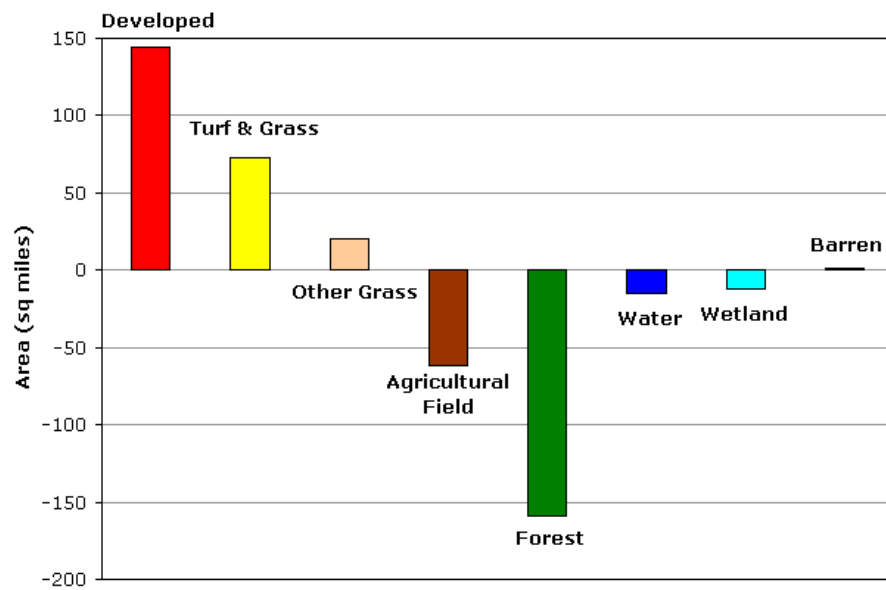


Figure 2. Statewide change in major land cover categories: 1985-2010. The declines in agricultural field and forest land nearly equate that of the increase in developed and related turf grass land covers.
Source: CLEAR 2014

A recovering economy could spark another burst in land development that places pressure on undeveloped lands. This places an urgency on all aspects of land protection from securing funding, surveying and appraising potential parcels, and to negotiating and closing of transactions to ensure that long-term protection goals are met before desirable properties are converted to other uses. DEEP and its partners recognize this threat and work continuously to prevent the further loss of open space resources.

B. Land Transfer & Parcelization

In the next fifteen to twenty years, significant tracts of lands across Connecticut are going to change hands and potentially uses as older landowners do or do not include conservation in their properties' futures. For example, of the state's 1.8 million acres of forestland, 70 percent is

1 privately-owned, and of this land 54 percent is owned by individual families in parcels of 10
2 acres or more.

3 A study on the attitudes, objectives, and behaviors of private forestland owners conducted
4 by the Yale School of Forestry and Environmental Studies and DEEP's Forestry Division found
5 that there is a significant risk of sale of forestland, with as many as one-third of these landowners
6 willing to sell if offered a reasonable price (Tyrell 2015). Vast amounts of the state's forest are
7 vulnerable to fragmentation, development, and parcelization, or the process of subdividing large
8 parcels of land into smaller parcels.

9 Not only does parcelization break up the landscape and cost the region valuable natural
10 and public recreational resources, and but it can also make it more difficult for DEEP and its
11 partners to protect land from further fragmentation or development. Depending on factors such
12 as location and market values, when a large tract of land is subdivided, the per-acre cost and the
13 number of willing sellers or entities needed to cooperate in protecting the land increases.

14 15 C. Funding Availability

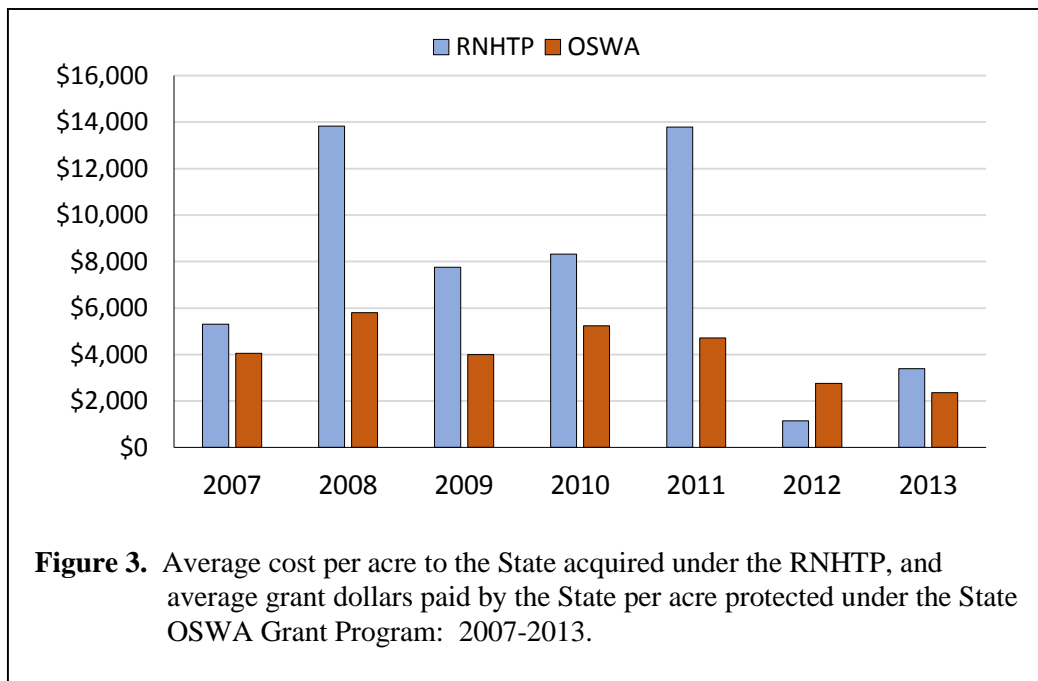
16 Securing adequate funding to achieve Connecticut's open space goal has been difficult
17 for several years. State bond funds, municipal, federal, and private funding for land conservation
18 purposes are limited. As a result, DEEP has seen a drop in the open space acreage acquired by
19 DEEP and in the number of grants submitted to DEEP's open space grant program.

20 Per acre costs for land protection (fee simple and easement acquisition) vary significantly
21 based on a number of variables including a landowner's financial flexibility and location, the
22 character and size of a parcel, and current property values at the time of acquisition. Some
23 property acquisitions can be accomplished with minimal per acre cost, while other are much

more expensive. For example, coastal property values are varied and can be more expensive on average than inland non-coastal acquisitions.

Annual average per acre costs to the State over recent years under the [Recreation and Natural Heritage Trust Program](#) (RNHTP), DEEP's program for purchasing lands that add to the State's system of Parks, Forests, and Wildlife Management Areas, have been as low as about \$1,100 in 2012 to as high as about \$13,800 in 2008 and 2011 (Figure 3). These numbers vary based on property values and on the degree to which properties are acquired by donation, partial donation, or with assistance of other funding entities. Regardless, these averages can be used as a reasonable predictor of cost to the State for acquisition.

Using an average per acre cost of about \$7,645 for properties acquired under RNHTP between 2007 and 2013, and given the 62,960 acres need to meet the DEEP's statutory open space goal, total acquisition funding needs for this program would equate over \$481 million between now and 2023.



Annual average per acre grant paid by the State under DEEP's [Open Space and Watershed Land Acquisition Grant Program](#) (OSWA) hovered between about \$2,700 in 2013 and \$5,800 in 2008. Using an average per acre grant cost of \$4,130 for DEEP's partners' properties protected under OSWA between years 2007 and 2013, and given the 108,920 acres DEEP's partners need to make their statutory open space goal, total program funding needs for this program up to year 2023 equates to nearly \$450 million.

Clearly, securing this magnitude of continual open space acquisition funding is idealistic. To make frugal use of currently available resources, DEEP works to ensure that its open space programs are working effectively and efficiently. To maximize resources, DEEP has increasingly pursued the purchase of conservation easements, accepted land donations, sought grants from private groups, and facilitated stronger partnerships with cost-sharing cooperators.

D. Stewardship of Protected Lands

The stewardship of open space requires major capital expenditures and management actions to address specific land conditions and ensure the adequate protection of open space lands. When evaluating the acquisition of a parcel of land, DEEP considers the purchase price of the parcel and the long-term associated costs, or carrying costs, of the acquisition, as well, such as dam removal or trails, habitat, or forest management, which can be expensive.

Conservation easements can carry their own costs associated with long-term monitoring requirements. As part of the award agreement and to maintain standing for future grant applications, several federal programs including the [Forest Legacy](#) and [Highland Conservation Act](#) programs require applicants to annually monitor lands for easement enforcement. Because

DEEP has limited staff and resources to monitor these lands, the agency seeks partnerships such as those with local land trusts who will assist in fulfilling these requirements.

Illegal encroachments are a significant and costly stewardship challenge to protected open space. Encroachments, or conducting an activity on another party's land that damages or alters the land, vegetation, or other features, includes but are not limited to: removing boundary markers; erecting buildings or other structures; building roads, driveways, or trails; dismantling stone walls; cutting vegetation; installing lawns or utilities; use of unauthorized or unpermitted motorized or all-terrain vehicles; or using, storing, or depositing vehicles, material, or debris.

DEEP works to resolve identified encroachment in a timely and effective manner, as it is imperative to preserve and protect lands held for the public as open space. Response actions can vary depending on the degree, duration, and other factors surrounding the encroachment.

Resolution of potential encroachments usually involve title research, survey work, and may require legal action. Encroachments remain a problem that requires constant action and diligence by DEEP and our partners.

E. Impacts by Climate Change

Climate change is perhaps the most significant challenge facing Connecticut's natural landscape today. Already, the state's lands and waters, and their associated flora and fauna, are experiencing changes as a result of rising sea levels, warming temperatures, and other consequences.

The Adaptation Subcommittee to the Governor's Steering Committee on Climate Change [published a report in 2010](#) on the impacts of climate change on four areas critical to Connecticut's well-being, including natural resources. This report identifies cold water streams

1 and tidal marshes as some of the most at-risk habitat types to climate change (Adaptation
2 Subcommittee 2010).

3 The suitability of cold water streams for native fish species such as wild brook trout will
4 decline as water temperatures increase as a result of climate change (Beauchene et al. 2014). In
5 many locations of the state, the critical water temperature threshold for such streams may already
6 be exceeded. In these stream courses, wild brook trout, slimy sculpin, and other dependent fish
7 and wildlife species are susceptible to population declines.

8 As sea levels rise, tidal wetlands will become submerged, resulting in their loss and
9 simultaneous impairment of beneficial ecosystem benefits such as flood water absorption and
10 fish and wildlife habitat. Together with intensifying storms, sea-level rise will also lead to
11 increased inland flooding. Inland flooding can lead to soil erosion, surface runoff, and stream
12 and river quality impairment.

13 The Adaptation Subcommittee followed their 2010 report on climate impacts with the
14 release of the State's [Climate Change Preparedness Plan of 2011](#). This plan reiterates the habitat
15 types identified in 2010 as at most risk from climate change and provides adaptation strategies to
16 reduce their risk of environmental degradation and increase their resiliency, including land
17 acquisition and protection.

18 For example, protecting existing core forest next to cold water streams (characterized as
19 unfragmented forested areas relatively far from non-forested areas²⁰) and lands adjacent to tidal
20 wetlands can connect large habitat linkages, ensure natural vegetated cover needed to maintain
21 cold water streams temperatures, and allow for the migration of tidal wetlands as a result of sea-
22 level rise.

²⁰ CLEAR 2007. [Forest Fragmentation Categories Explained](#), Connecticut's Changing Landscape Study.

1 Preparing inland and coastal natural resources for impacts by climate change is a serious
2 and on-going effort that DEEP and its partners work continuously in support of. The Green Plan
3 complements current state planning documents by placing an emphasis on discussing related
4 threats and introducing throughout the document new recommendations to acquire key lands that
5 will serve to protect at-risk habitats and strategize future acquisitions with climate change in
6 mind.

7 8 F. Data Needs for Open Space Planning

9 To best achieve the State’s open space goals, DEEP needs a complete and accurate
10 inventory of how much land in Connecticut has been acquired as open space, where it exists, and
11 of what land use purposes each are comprised. With such an inventory, DEEP and its partners
12 would be equipped to make better and more proactive decisions about the acquisition and
13 stewardship of key lands for conservation and public recreation purposes.

14 Currently, DEEP has only an estimate of land held as open space by its own agency and
15 has no inventory for other state agencies. Landscape-scale conservation planning by DEEP
16 would be improved with information on which farm’s development rights are currently held
17 under the Connecticut Department of Agriculture’s Farmland Preservation Program. With
18 regard to open space held by DEEP’s partners, what estimates the Department has conflict with
19 those derived from other sources, such as the [Land Trust Alliance](#) and the [National Conservation](#)
20 [Easement Database](#).

21 The State open space grant program provides some information about how much and
22 where land is held by municipalities, non-profit land conservation organizations, and water
23 companies. Started in 2013, DEEP partnered with the University of Connecticut and the [Trust](#)

1 [for Public Land](#) to produce a publicly accessible GIS map layer of all acquisition projects
2 awarded open space grants to date. The map layer, which will show where nearly 30,000 acres
3 of open space is located, is currently being checked for data quality and control.

4 Other than what is known through administering the open space grants, DEEP has little
5 and outdated information on the total acreage its partners have protected through other means.
6 To attempt to meet this challenge, the [Protected Open Space Mapping Project](#) (POSM) was
7 initiated in 2003 to identify, catalog, and digitally map all dedicated open space in Connecticut
8 by researching records at town halls.

9 While every attempt is made to gather accurate information, DEEP's estimates are just
10 that. The data collected for POSM was quickly outdated and did not include conservation
11 easements, and the funding has recently ended to complete the project. Furthermore, DEEP is
12 left unaware of future lands that become acquired or protected for conservation by its partners or
13 other private entities.

14 To help support statewide land acquisition planning, DEEP has developed a pilot [Public](#)
15 [Use and Benefit Land Registry](#) (Land Registry). As it becomes populated with information, this
16 pilot system will offer a comprehensive, publicly-accessible geodatabase that provides users with
17 advanced attribute information such as property deed restrictions, acquisition funding sources,
18 and purposes of open space.

19 The Land Registry, which will incorporate POSM data, state open space grant program
20 data, and information on other lands not owned by DEEP, will be useful in planning future open
21 space protection, trail and outdoor recreation development, and more. Cooperation between
22 DEEP and its land conservation partners will be vital to populating this geodatabase and keeping
23 information up-to-date.

III. Status of Connecticut Open Space

A. Overall Open Space Goal

To have 21 percent of Connecticut's land conserved as open space requires 673,210 acres to be held by the State, municipalities, non-profit land conservation organizations, and water companies. As of December 2015, the State (DEEP) held approximately 257,616 acres as open space in its system of Park, Forest, and Wildlife Management Areas. Based on a target of 320,576 acres in total open space holdings, the State held about 80 percent of its open space goal.

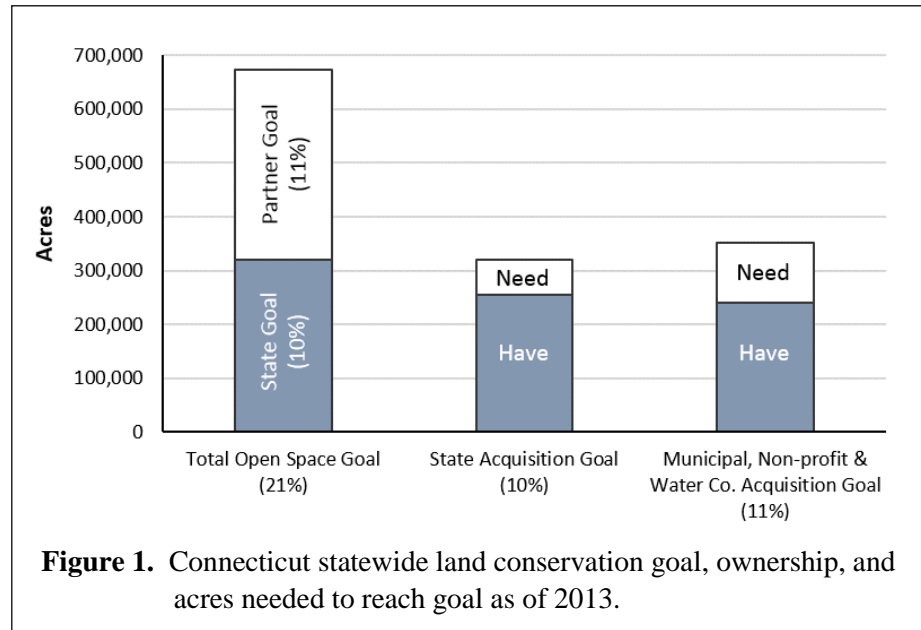
Of this area, approximately 237,080 acres have been acquired in fee simple ownership. Acquisitions of less-than-fee interests include the purchase of conservation easements and restrictions. The Kelda and Childs water company properties are special acquisitions purchased in 2002 and 2003 and together account for 15,210 acres in conservation easements and restrictions held by DEEP.

As of late 2015, open space acreage held by the State's land conservation partners (municipalities, non-profit land conservation organizations, and water companies) was estimated at a total 243,714 acres. Based on a target of 352,634 acres in total open space holdings for these entities, they held 69% of their targeted open space goal.

DEEP's estimation of total acres owned by its partners is conservative since they typically do not relay to the Department every time they close on an acquisition. Therefore, DEEP's partners may be closer to their goal than the Department is aware. The open space data collection recommendations in this plan should bring DEEP to a more accurate estimation of lands owned by its partners.

DEEP and its partners held 501,330 acres held as open space at the end of 2015, or 15.4 percent of Connecticut's land area. To meet the overall statutory open space goal, DEEP must

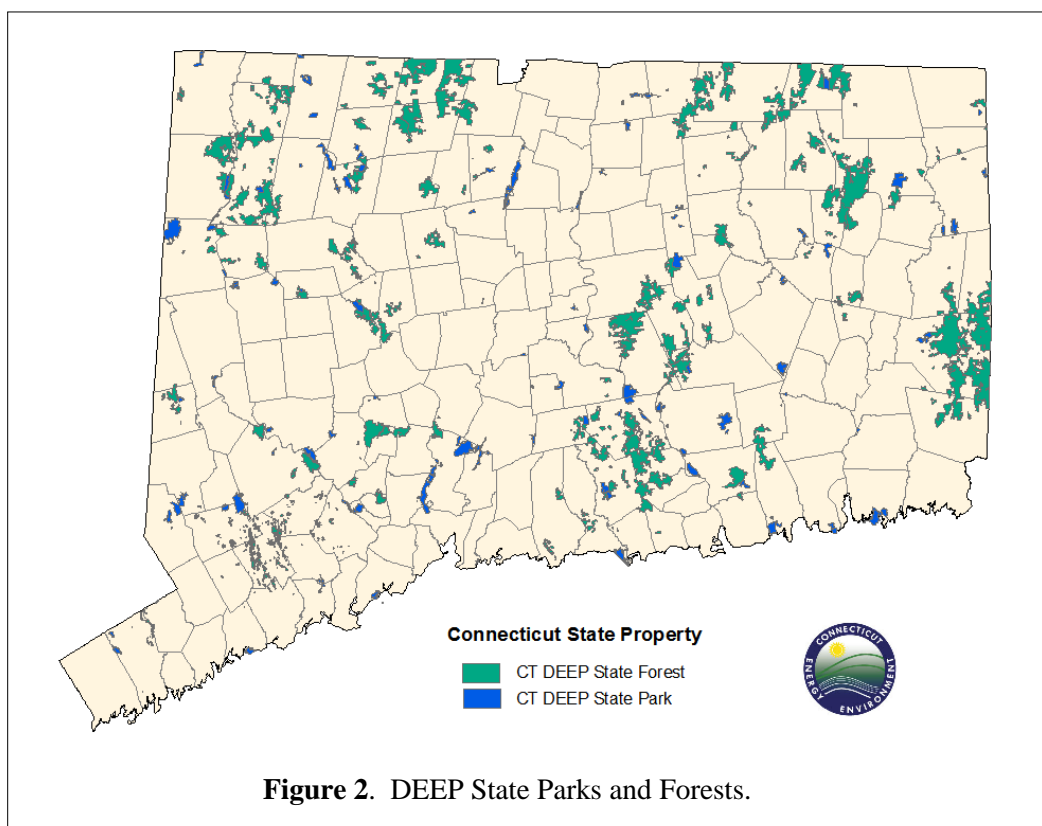
1 acquire an additional 62,960 acres and encourage the acquisition of 108,920 acres by
2 municipalities, non-profit land conservation organizations, and water companies (Figure 1).



B. State-held Open Spaces

I. Parks & Forests

Beginning with Meshomasic State Forest in 1903 and Sherwood Island State Park in 1914, the State of Connecticut has been acquiring land for [public parks and forests](#) for more than a century. As of late 2013, the State Park system includes 107 locations covering over 36,000 acres. In addition, DEEP manages 32 State Forests covering 170,000 acres, many of which are large holdings of more than 10,000 acres (Figure 2).



State Forests help to protect environmental quality and are generally used for sustainable forestry practices and complement State Park outdoor activities such as hiking, cross-country skiing, horseback riding, wildlife viewing, hunting and fishing, and in some cases, swimming,

picnicking, and camping. Accessible parking and picnic tables for individuals with disabilities are available at all State Park and Forest recreation areas. Many Parks and Forests provide additional features such as accessible restrooms, camping, and fishing platforms.

Between 2007 and 2013, 14 acquisitions totaling 424 acres were added to the State Park system, funded with \$10,735,000 from the State's Recreation and Natural Heritage Trust Program (RNHTP) and \$1,657,879 from private and federal cost-share partners (Table 1). During the same period, 38 acquisitions totaling 1,956 acres were added to the State Forest system, with \$9,651,002 in funding from the RNHTP, and \$272,138 contributed towards the same projects from private and federal partners (Table 2).

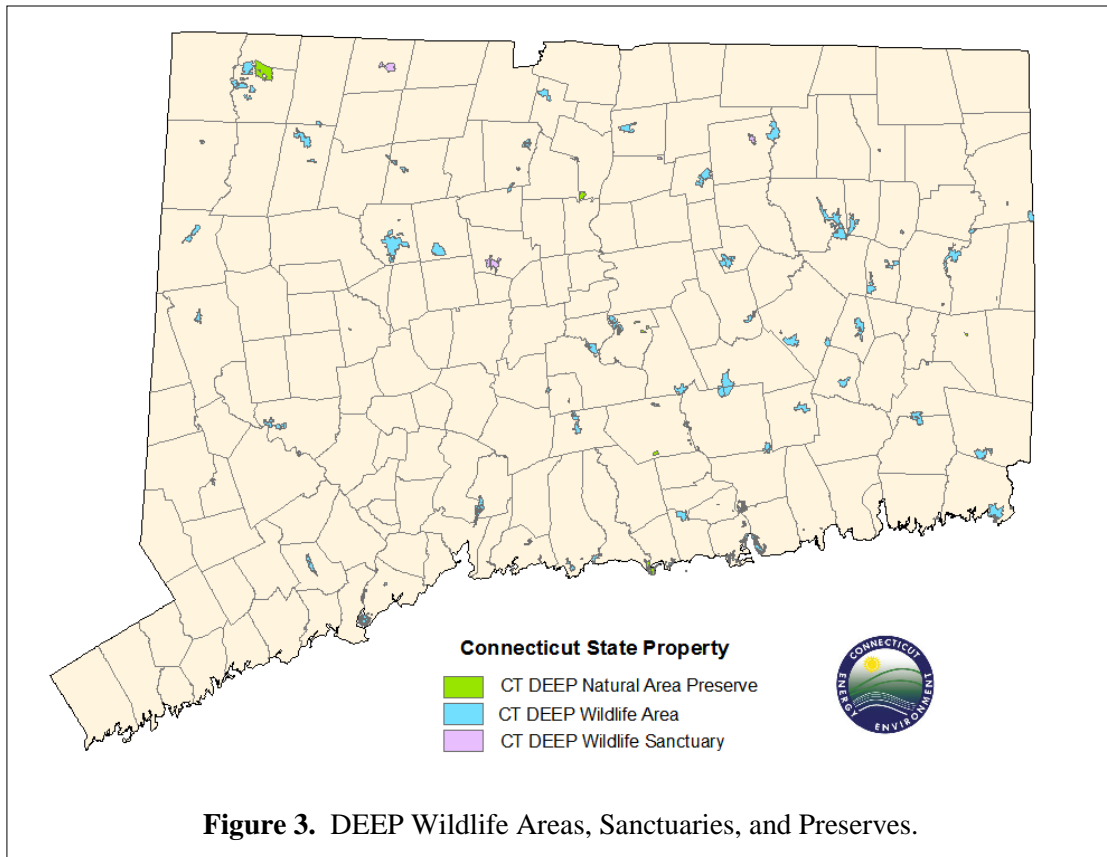
Table 1. DEEP acquisitions added to the State Park system: 2007-2013.			
State Park	Fee Acres	State Cost	Cooperator Share
Machimoodus	143.1	\$3,200,000	\$1,341,879
Huntington	132.5	\$4,000,000	NA
Southford Falls	40.0	\$400,000	\$100,000
West Rock Ridge	37.7	\$225,000	\$170,000
Gillette Castle	20.0	\$0	NA
Diana's Pool Water Access	18.2	\$0	\$46,000
Matianuck Sand Dunes	15.7	\$110,000	NA
Penwood	4.8	\$575,000	NA
Sleeping Giant	3.9	\$0	NA
Bantam Lake Water Access	2.8	\$1,990,000	NA
Pomeroy	2.3	\$35,000	NA
Humaston Brook	2.2	\$200,000	NA
Air Line Trail	1.5	\$200,000	\$140,000
Sunrise Resort	0.9	\$0	NA
Totals	425.6	\$10,935,000	\$1,797,879

Table 2. DEEP acquisitions added to the State Forest system: 2007-2013.

State Forest	Fee Acres	State Cost	Cooperator Share
Meshomasic	411.8	\$1,520,165	NA
Housatonic	373.7	\$3,595,000	\$100,000
Shenipsit	290.1	\$881,215	NA
Pachaug	221.4	\$468,622	\$172,138
Natchaug	171.3	\$991,000	NA
American Legion	144.5	\$600,000	NA
Salmon River	185.1	\$675,000	NA
Cockaponset	76.7	\$0	NA
Nehantic	40.0	\$120,000	NA
Naugatuck	27.0	\$800,000	NA
Wyantenock	13	\$0	NA
Massacoe	1.7	\$0	NA
Totals	1,956.3	\$9,651,002	\$272,138

II. Wildlife Management and other Natural Heritage Areas

Connecticut's natural heritage is preserved and managed across over 33,000 acres of State Wildlife Management Areas, Sanctuaries, and Natural Area Preserves and Coastal Area Reserves (Figure 3). DEEP manages 44 Wildlife Management Areas (WMA) for the conservation and sustainability of wildlife populations, to conduct scientific research, to provide educational programs, in some cases to practice sustainable timber harvesting, and to provide passive recreational activities such as hunting, fishing, and wildlife viewing.



2

3 For example, the 282-acre Belding WMA in Vernon contains a diverse mosaic of wildlife
 4 habitats including soft and hardwood forests, open meadow, wetlands, streams, and a pond. Fed
 5 by cold springs, the Tankerhoosen River runs through the property and hemlocks lining the river
 6 keep the water cold enough to sustain wild trout populations. The section of the Tankerhoosen
 7 River that flows through Belding WMA was designated a Class 1 Wild Trout Management Area
 8 in 1993, the first of its kind in Connecticut.

9 Wildlife Sanctuaries are areas where wildlife is protected and hunting or trapping is not
 10 allowed, such as the Shade Swamp Wildlife Sanctuary in Farmington. Natural Area Preserves,
 11 such as the Hammonasset Natural Area Preserve in Madison, are State lands that are approved by
 12 the Governor as a “natural area.”

Natural Area Preserves are defined by General Statute Sec. 23-5a as “an area of land or water, or land and water, containing, or potentially containing, plant or animal life or features of biological, scientific, educational, geological, paleontological, or scenic value worthy of preservation in their natural condition”.

Between 2007 and 2013, 13 acquisitions totaling 1,159 acres were added to the State Wildlife Management Area system, funded by \$6,622,388 from the State’s Recreation and Natural Heritage Trust Program (RNHTP) and \$1,622,500 from cost-share cooperators (Table 3).

During the same period, conservation easements were acquired on almost 30 acres at Barn Island WMA in Stonington and on a parcel in Bloomfield specifically requiring the parcels to be managed for the protection of declining grassland bird habitat. These easements were funded with \$624,250 from RNHTP and \$2,332,000 from cost-sharing cooperators including the U.S. Department of Agriculture’s Natural Resource Conservation Service.

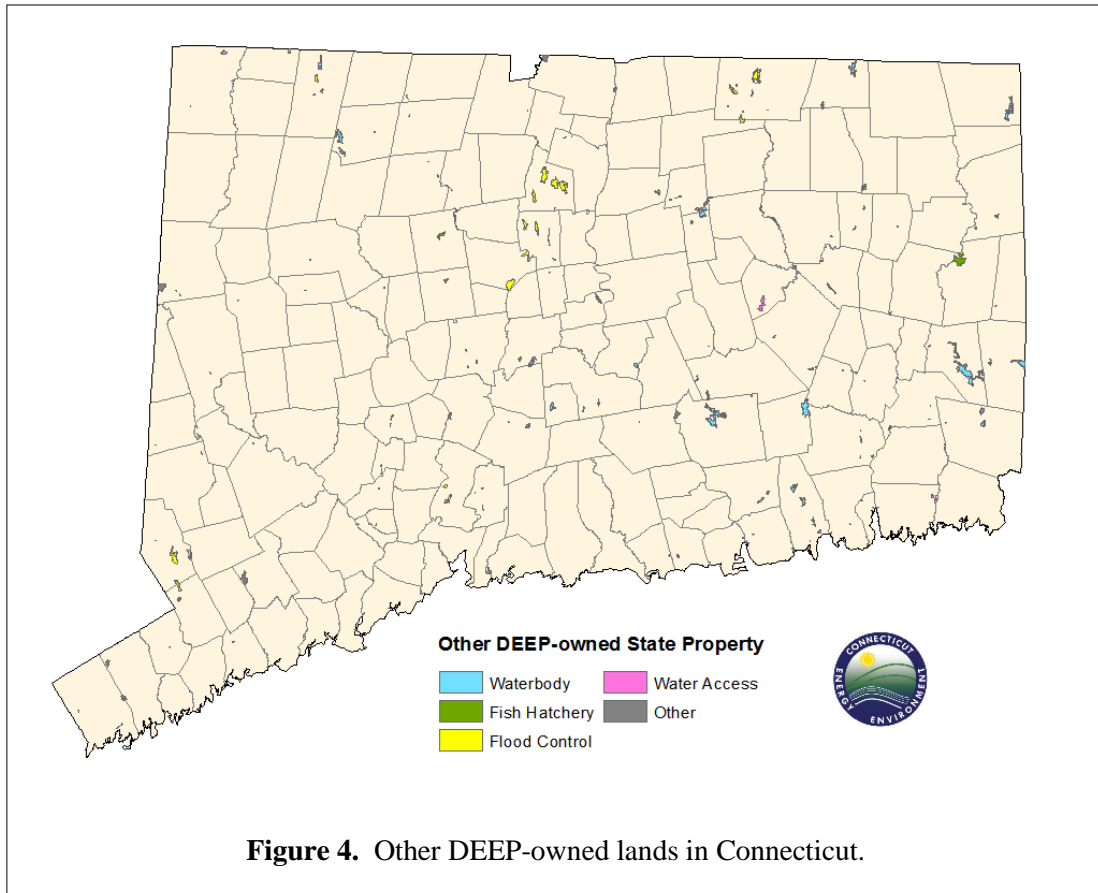
Table 3. DEEP acquisitions added to the State Wildlife Management Area system: 2007-2013.			
Wildlife Management Area	Fee Acres	State Cost	Cooperator Share
Tankerhoosen	454.3	\$2,965,000	NA
Suffield	270.1	\$3,100,000	NA
Meadowbrook	161.9	\$0	NA
Simsbury	57.0	\$0	\$225,000
Barn Island	54.6	\$270,000	900000
East River Marsh	45.1	\$57,250	302500
Franklin Swamp	40.3	\$122,000	NA
Quinebaug	20.3	\$60,000	NA
Talbot	19.5	\$24,313	NA
James V. Spignesi, Jr.	17.7	\$0	195000
Wangunk Meadows	15.9	\$23,825	NA
Hammock River Marsh	2.8	\$0	NA
Totals	1,159.4	\$6,622,388	\$1,622,500

III. Other DEEP-owned Lands

DEEP owns and provides public access and recreation to numerous inland water bodies and rivers and roughly 140 miles of shoreline and 9 miles of sandy beach along the Connecticut coast. The Department also owns several flood control areas, fish hatcheries, and other areas that have not yet been assigned a specific use category, or that are unique and do not fit into any of the previously described categories (Figure 4).

Flood control areas generally contain dams, related structures, and impoundment areas, and in some cases allow public recreation. DEEP's three major fish hatcheries where fish are either farmed or held for stocking statewide water bodies and waterways are the Quinebaug, Burlington, and Kensington Hatcheries.

Other DEEP-owned areas include the Marine, Eastern, and Western District Headquarter facilities and the Israel Putnam Monument. Not all of the lands in these categories are counted towards the State's open space goal of protecting 21% of Connecticut, especially DEEP buildings such as operational headquarters and garages.



IV. Open Space Held by Other State Agencies

The State Department of Agriculture (DoAg) [Farmland Preservation Program](#) has a goal of preserving 130,000 acres of farmland, with 85,000 acres of cropland. The objective of program is to secure a food and fiber producing land resource base, consisting primarily of prime and important farmland soils, for the future of agriculture in Connecticut. DoAg protects farmland through the acquisition of the development rights to, and placing permanent non-agricultural use restrictions on, properties in active agriculture.

Lands where DoAg has acquired development rights remains in private ownership and are not available to the general public for use without further agreement from the farm owner. Because lands protected from development by DoAg are not maintained for ecological or public

1 outdoor recreational purposes, these lands have not been counted towards the overall State's goal
2 of protecting 21 percent of Connecticut's land area.

3 Other Connecticut agencies such as the Departments of Corrections and Mental Health
4 and Addiction Services manage land across the state primarily for operational purposes. DEEP
5 does not have a comprehensive inventory of lands owned by other Connecticut State agencies,
6 nor does it know which of these lands may be of high value for ecological or recreational
7 resource protection. In accordance with the recommendations of this plan, DEEP will be
8 working with other agencies to identify and potentially protect in perpetuity or for some other
9 duration State-owned lands of high conservation value.

C. Open Space Held by Land Conservation Partners

I. Municipalities

Connecticut's cities and towns care deeply about the environmental and cultural resources found on lands within and extending across their borders. Municipal officials, commission members, and residents work together, sometimes in partnership with local land trusts, to garner support and pass bond referendums that secure local funding for open space.

As of December 2013, DEEP estimates that Connecticut's municipalities own about 80,727 acres of land as protected open space. DEEP supports the acquisition of open space by municipalities by administering the State Open Space and Watershed Land Acquisition Grant Program (OSWA). Since the program's inception in 1998, over 135 cities and towns have been awarded funding for the protection of over 30,000 of public open space.

Between 2007 and 2013, 51 municipalities closed on 103 projects preserving 5,475 acres with \$27,848,179 in assistance from OSWA (Table 4). An additional 4 projects were closed in collaboration between municipalities and non-profit land conservation organizations, preserving 463 acres with \$1,532,675 in assistance from OSWA (Table 5).

Table 4. Acquisition projects closed by municipalities with partial funding from the State Open Space and Watershed Land Acquisition Grant Program: 2007-2013.

Year	Projects Closed	Acres Protected	Grant Amount
2007	21	829.02	\$4,581,433
2008	26	1,188.53	\$6,313,245
2009	10	929.39	\$3,885,723
2010	20	1,005.54	\$4,659,000
2011	13	967.83	\$4,937,500
2012	6	317.23	\$1,950,378
2013	7	238.32	\$1,520,900
Totals	103	5,475.86	\$27,848,179

1

Table 5. Collaborative acquisition projects completed with partial funding from the State Open Space and Watershed Land Acquisition Grant Program: 2007-2013.			
Collaborators	Project Name	Acres Protected	Grant Amount
Town of Somers & Northern Connecticut Land Trust	Whitaker Woods Property	265.10	\$450,000
City of Norwalk & Norwalk Land Trust	White Barn Parcel	5.13	\$450,000
Town of Old Lyme & The Nature Conservancy	Roger Tory Peterson Property	54.26	\$357,675
Town of Somers & Northern Connecticut Land Trust	Trappe Property	138.67	\$275,000
Totals		463.16	\$1,532,675

2

3 For example, the Whitaker Woods and Trappe Property projects awarded to the Town of
 4 Somers were in partnership with the Northern Connecticut Land Trust (NLCT). One of the last
 5 intact undeveloped areas in Somers, the Whitaker Woods Property protects land adjacent to the
 6 Shenipsit State Forest and existing NCLT property. The project's acquisition connects to a
 7 nearby Blue-Blazed Hiking Trail to create a contiguous recreational trail system.

8 Two years after closing on the Whitaker Woods Property, the Town of Somers and the
 9 NCLT partnered to acquire the Trappe Property to close gaps in other local trails, protect the
 10 summit of Bald Mountain Ridge, and safeguard steep slopes, forestland, and several streams
 11 important to the natural area's ecosystem.

12

13 **II. Non-profit Land Conservation Organizations**

14 Privately operating, non-profit land conservation organizations (NLCOs) are key allies in
 15 State and local land protection efforts. Over 137 land trusts and other land conservation
 16 organizations not only directly acquire land and easement restrictions for conservation, but also
 17 assist the State and municipalities in open space protection.

DEEP estimates that NCLOs own about 62,438 acres of open space in Connecticut. However, the Land Trust Alliance reported that in 2010 Connecticut land trusts held 99,549 acres in permanently protected open space, and the National Conservation Easement Database reported that in 2014 land trusts held 64,146 acres under easements (LTA 2010; NCED 2014). These disparities emphasize the need for a more accurate open space database administered in cooperation with statewide land conservation partners.

Since the program's inception in 1998, 62 non-profit land trusts or other conservation organizations have been awarded funding for land acquisition under the State Open Space and Watershed Land Acquisition Grant Program (OSWA). Between 2007 and 2013, 34 NLCOs closed on 56 projects preserving 3,928 acres with \$12,846,599 from OSWA (Table 6).

Table 6. Acquisition projects closed by non-profit land conservation organizations with partial funding from the State Open Space and Watershed Land Acquisition Grant Program: 2007-2013.

Year	Projects Closed	Acres Protected	Grant Amount
2007	9	626.68	\$1,933,802
2008	14	574.64	\$3,657,150
2009	5	369.54	\$1,289,255
2010	5	217.42	\$1,213,100
2011	10	710.80	\$2,622,842
2012	5	436.56	\$755,200
2013	8	992.55	\$1,375,250
Totals	56	3,928.19	\$12,846,599

III. Water Companies

Connecticut private and quasi-public water companies support conserving lands that enhance protections of drinking water supplies. They actively seek to acquire appropriate watershed lands that improve or maintain water quality, including steeply sloping lands, large tracts of forest cover near watercourses, floodplains, wetlands, and groundwater recharge areas.

1 DEEP estimates that Connecticut water companies hold approximately 97,584 acres,
2 which represents nearly 20 percent of all open space ownership in the state. This area of open
3 space includes 5,800 acres of Class I and Class II designated lands²¹ acquired by DEEP's
4 partners through the State open space grant program.

5 Many Connecticut water companies provide for limited public recreation on their
6 holdings. Further, any water company can apply to the State Department of Public Health to
7 permit recreational access on its land where appropriate.

8 For example, the Aquarion Water Company's reservoirs are surrounded by more than
9 15,000 acres in the [Centennial Watershed State Forest](#). This State Forest was acquired in 2002
10 and is managed in partnership by Aquarion, DEEP, and The Nature Conservancy. A hiking
11 permit allows access to 17 miles on the Blue-Blazed Saugatuck and Aspetuck trails, a fishing
12 permit allows freshwater fishing at the Saugatuck, West Pequonnock, and Far Mill reservoirs,
13 and a hunting permit provides access to seasonal deer hunting.

14 Water companies are authorized to sell lands they hold that are deemed no longer needed
15 for the operation, protection, and maintenance of a public water supply system, and after
16 undergoing a lengthy statutory process, many lands sold by water companies have been
17 purchased by the State, municipalities, and land trusts for permanent conservation as open space.

18 For example, following the statutory disposition process, the South Central Connecticut
19 Regional Water Authority sold 411.1 acres of its holdings known as the Racebrook Tract to the
20 Towns of Orange and Woodbridge for conservation, environmental education, and public
21 recreation purposes.

²¹ Defined in (CGS) Sec. 25-37c

1 One of the first awards in the program’s history, in 2000 the Town of Orange acquired
2 230 acres of Racebrook Tract with partial funding in the amount of \$450,000 from DEEP’s Open
3 Space and Watershed Land Acquisition Grant Program. The Town of Woodbridge was awarded
4 DEEP open space grants totaling over \$1.2 million in funding to acquire an additional 181.1
5 acres of the Tract in three phases between 2005 and 2010.

6 This multi-phase, multi-partner watershed lands acquisition for open space is exemplary
7 of effective conservation partnerships between a water company and municipalities with funding
8 assistance from the State. As part of the purchase agreements, the water company committed to
9 the re-investment of the proceeds from the sales towards the acquisition of additional Class I and
10 Class II designated watershed lands.

11 Therefore, the protection of the Racebrook Tracts served to not only conserve forest and
12 riparian habitat, offer scenic recreation opportunities, and provide region-wide access to open
13 space for the Greater New Haven area, but also resulted in the acquisition and preservation of
14 twice the amount of watershed lands that might otherwise be accomplished.

D. Statewide Trails & Greenways

Trails and greenways cover over 1,000 miles in Connecticut and run through federal, state, municipal, and private property. Trails provide passive recreation opportunities, encourage active lifestyles, support tourism, and connect open spaces across the state. Greenways can be a small belt of open space along a stream or a broad swath of land representing natural corridors that contain or link important ecological and cultural resources, through which a recreational trail may or may not exist.

There are 74 [Officially Designated Greenways](#) in Connecticut, 41 of which were named between 2007 and 2013 (Figure 5). Known as blueways, other corridors are being planned and developed along many of the State's major waterways, including the Housatonic, Willimantic, and Naugatuck Rivers.

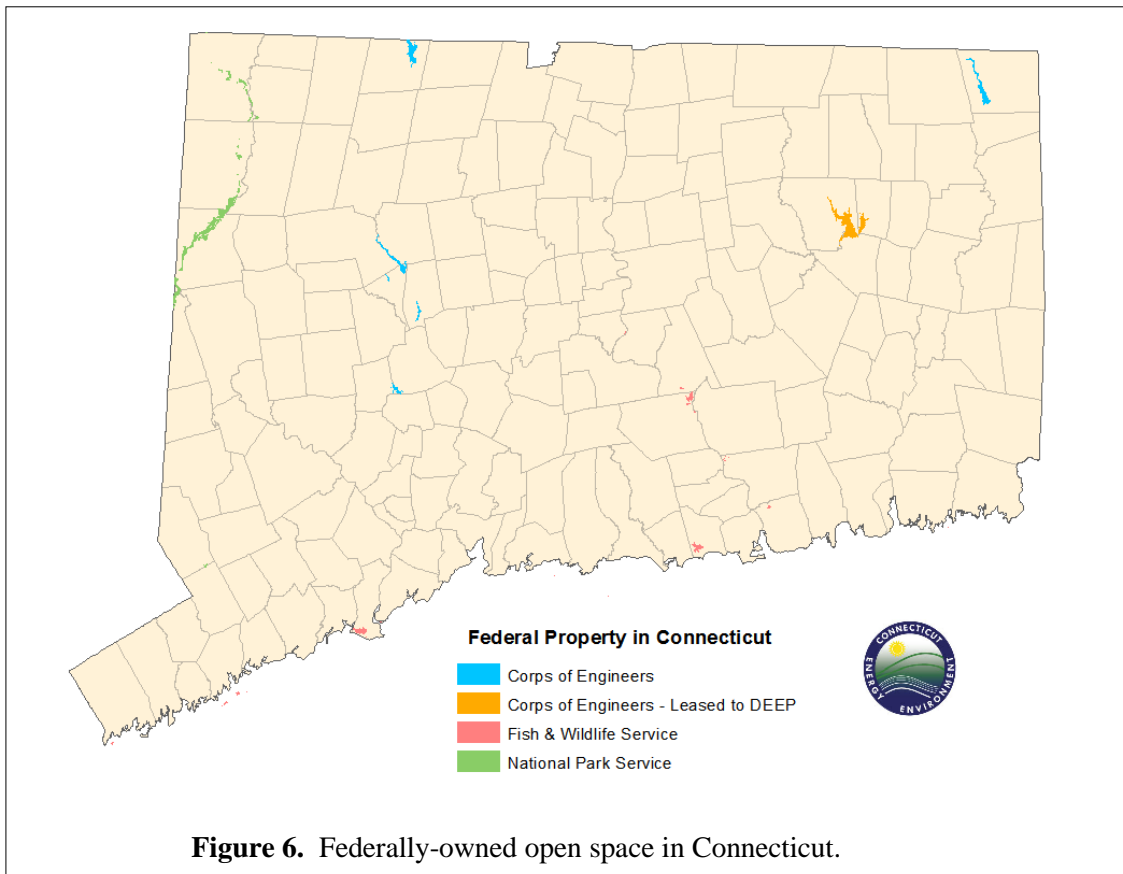
1 Much of the Metacomet-Monadnock-Mattabesett Trail System in Connecticut and
2 Massachusetts has been federally-designated as the [New England National Scenic Trail](#). This
3 National Scenic Trail is approximately 215 miles long and crosses 41 communities in central
4 Connecticut and western Massachusetts. Since its federal designation, a 14-mile extension to the
5 Long Island Sound has been added to the route.

6 The [East Coast Greenway](#) is a National Millennium Trail running 2,900 miles from
7 Florida to Maine, 198 miles of which passes through Connecticut. In 2013, portions of the Air
8 Line and the Hop River State Park Trails in eastern Connecticut were added to the Greenway,
9 helping to promote and connect open space and historic mill towns. To the west, the Greenway
10 connects the cities of Hartford, New Haven, Bridgeport, and Stamford. It also connects and
11 allows users to tour the Farmington Canal Heritage Greenway in Simsbury.

12 Trails and greenways that are not protected from development through legal means such
13 as deed or conservation easement restrictions do not count towards the State's open space goal of
14 protecting 21 percent of Connecticut's land base. The official designation or recognition of State
15 trails, greenways, and blueways for their ecological and cultural values emphasizes the need and
16 demand to protect and connect these lands as dedicated open space.

17 18 **E. Federally-owned Open Space**

19 The U.S. National Park Service, Fish and Wildlife Service, and Army Corps of Engineers
20 protect and manage about 10,000 acres in Connecticut for passive outdoor recreation, wildlife
21 habitat, and flood control purposes (Figure 6).



2

3 **I. US Fish and Wildlife Service**

4 The U.S. Fish and Wildlife Service owns and administers two National Wildlife Refuges
 5 in Connecticut: the Stewart B. McKinney National Wildlife Refuge and the Silvio O. Conte
 6 National Fish and Wildlife Refuge.

7 Established in 1972, the [Stewart B. McKinney National Wildlife Refuge](#) (NWR) is
 8 Connecticut's first federally-owned conservation holding. Located within the Atlantic Flyway,
 9 the Refuge is comprised of 10 units that encompass more than 1,000 acres of forest, barrier
 10 beach, tidal wetland, and fragile island habitats, spanning 70 miles of Connecticut coastline.

1 In addition to habitat for several species of mammals, insects, and other wildlife, the
2 Steward B. McKinney NWR provides critical habitat for federally endangered roseate terns,
3 federally threatened piping plovers, and a nesting population of saltmarsh sparrows, which are
4 listed by DEEP as a species of special concern and as ‘globally vulnerable’ by International
5 Union for Conservation of Nature.

6 The entire Connecticut River watershed was designated as the [Silvio O. Conte National](#)
7 [Fish and Wildlife Refuge](#) (Conte Refuge) in 1997. Comprised of 7.2 million acres within the
8 states of Connecticut, New Hampshire, Vermont, and Massachusetts, the Conte Refuge is the
9 nation’s only Fish and Wildlife Refuge in the country.

10 The Conte Refuge protects over 36,000 acres within the Connecticut River watershed,
11 and the U.S. Fish and Wildlife Service is actively seeking to acquire additional lands throughout
12 the region. Of the watershed’s 7.2 million acres, 936,000 acres, or 13%, lie in Connecticut.

13 Current Conte Refuge land in Connecticut includes the 31-acre Deadman's Swamp in
14 Cromwell, the 56-acre Roger Tory Peterson Unit in Old Lyme, and the 425-acre Salmon River
15 and 50-acre Whalebone Cove Divisions in Haddam and Lyme. These lands protect biologically
16 diverse habitats that support numerous fish and wildlife species throughout the year.

17 18 **II. US National Park Service**

19 The U.S. National Park Service (NPS) owns one National Historic Site and one National
20 Scenic Trail in Connecticut. In 2013, these two National landmarks attracted 22,862 visitors and
21 generated \$1,300,000 in economic benefit from tourism (Cullinane et al. 2013). NPS owns and
22 manages the 110-acre Weir Farm National Historic Site in Wilton, one of only 79 National
23 Historic Sites in the NPS system and the only designated National Historic Site in Connecticut.

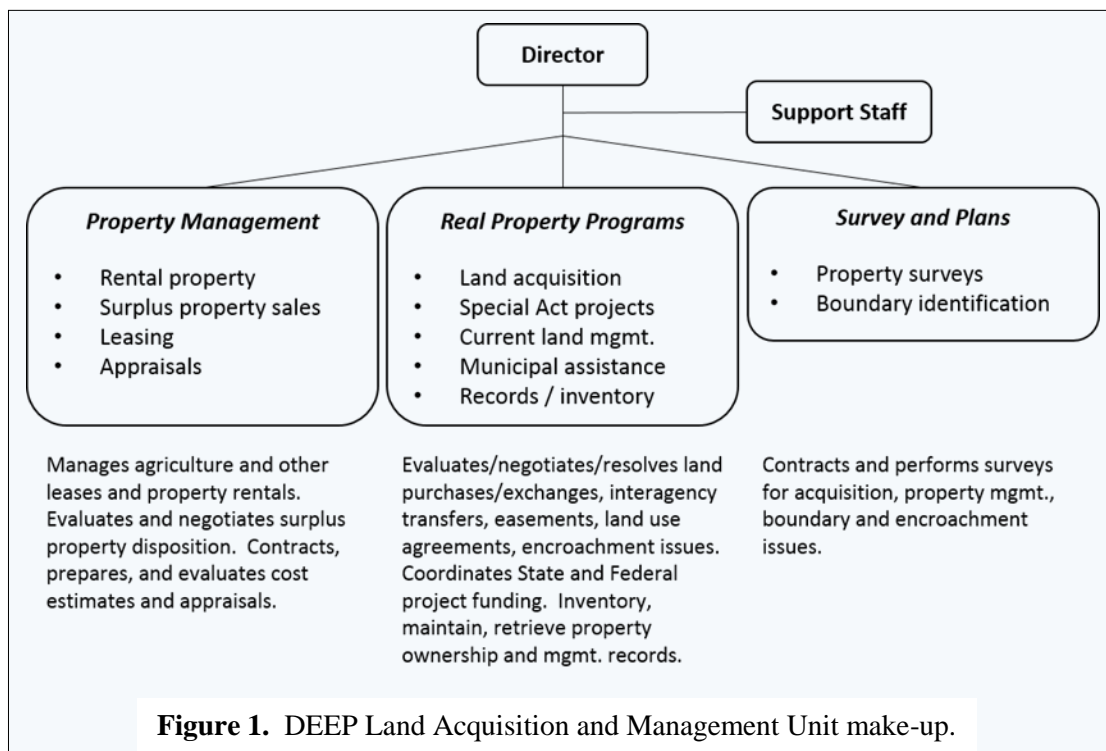
1 In partnership with the U.S. Forest Service and the non-profit Appalachian Trail
2 Conservancy, NPS owns and manages the Appalachian National Scenic Trail, a 2,185-mile
3 footpath along the Appalachian Mountains from Georgia to Maine. A 51.6-mile portion of the
4 Appalachian National Scenic Trail runs in Connecticut along ridgelines to the west above the
5 Housatonic River Valley.

6 7 **III. US Army Corps of Engineers**

8 The U.S. Army Corps of Engineers own and actively maintain eight large flood control
9 dams and approximately 4,000 acres of associated open space. Six of these sites (Thomaston
10 Dam, Black Rock Dam, Colebrook River Lake, Hancock Brook Lake, Hop Brook Lake, and
11 Northfield Brook Lake) are located in western or northwestern Connecticut, while the West
12 Thompson and Mansfield Hollow Lakes are located in eastern Connecticut. All of these sites are
13 open to recreational use and collectively attract about one million visitors annually.

IV. Land Conservation Funding Programs & Partners in Connecticut

There are three primary land acquisition programs administered by the State of Connecticut. Two of these programs are administered by DEEP, while the other is within the State's Department of Agriculture. The principle goal of each program is the preservation or conservation of undeveloped state land. In the Office of Constituent Affairs and Land Management, DEEP's Land Acquisition and Management Unit (LAM) implements the agency's open space policies and programs (Figure 1).



A. State Recreation and Natural Heritage Trust Program

The [Recreation and Natural Heritage Trust Program](#) (RNHTP) is DEEP's main program for purchasing or conserving lands that add to the State's system of Parks, Forests, and Wildlife Management Areas for conservation and public use and benefit. The program was established as a pilot project in 1986 with a \$2 million bond authorization and has since become permanent.

The purpose of the RNHTP is to acquire lands that represent the ecological diversity of Connecticut, including natural features such as rivers, mountains, coastal systems, and other natural areas, in order to ensure the preservation and conservation of such land for recreational, scientific, educational, cultural, and aesthetic purposes²².

Between 2007 and 2015, about 5,865 acres in 46 towns were protected through the State RNHTP (Table 1). Matching contributions by federal agencies, municipalities, and private and non-profit organizations saved the state over \$16 million in acquisition costs during this time.

Table 1. Summary of projects acquired by DEEP under the State Recreation and Natural Heritage Trust Program between 2007 and 2015. Acreages are for fee simple acquisitions, and easements or right of ways are not included.				
Year	Projects Closed	Fee Acres Acquired	State Cost Share	Cooperators' Match Share
2007	21	854.72	\$4,293,205	\$450,000
2008	18	1,300.84	\$16,537,573	\$1,441,879
2009	4	118.62	\$270,000	\$650,000
2010	4	63.72	\$57,250	\$472,500
2011	9	557.63	\$6,546,750	\$1,138,250
2012	8	341.12	\$100,000	\$514,750
2013	6	467.23	\$27,862	\$1,567,138
2014	7	367.55	\$0	\$515,000
2015	13	1,807.19	\$4,737,000	\$10,038,408
Totals	90	5,865.24	\$32,429,640	\$16,788,175

²² (CGS) Sec. 23-73

1 The State’s land acquisition process under the RNHPT occurs through purchase or
2 private donation in several ways including fee simple and easements for access, use, and/or
3 conservation. While there are other land protection methods available, such as the right of first
4 refusal, land exchanges with other public agencies or private non-profit organizations, or the
5 transfer of development rights, these are less frequently used by DEEP.

6 A potential property for acquisition by the State must be for sale on the open market or
7 the property owner must have expressed interest in the sale or donation of the property. As
8 parcels of land are made available by willing sellers, DEEP assesses their compatibility with the
9 framework and open space priorities established in the Green Plan. A property acquired under
10 the RNHPT should possess one or more of the following:

- 11 1. High value for recreation, forestry, fishery, or wildlife conservation, especially if it is
12 near a population center;
- 13 2. A prime natural feature of the Connecticut landscape, such as a major river, its
14 tributaries and watershed, mountainous territory, an inland or coastal wetland, a
15 significant littoral or estuarine or aquatic site, or any other important geologic feature;
- 16 3. Habitat for native plant or animal species listed as threatened or endangered or of
17 special concern, particularly areas identified as essential habitat for such species;
- 18 4. A relatively undisturbed outstanding example of a native ecological community which
19 is now uncommon; or
- 20 5. Is threatened with conversion to incompatible uses or contains sacred sites or
21 archaeological sites of state or national importance.

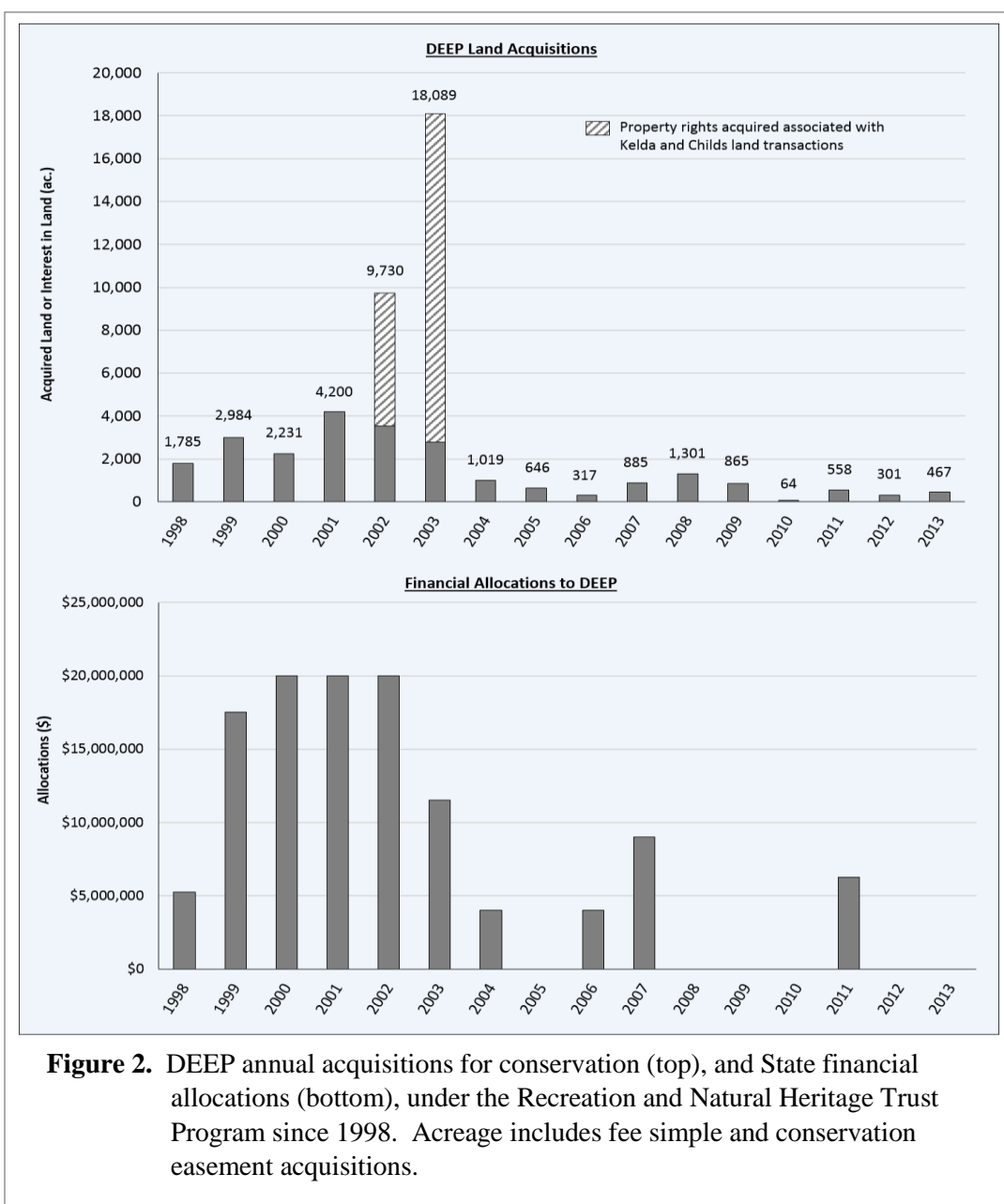
22 Using a statewide acquisition priority rating system, potential properties for acquisition
23 under the RNHPT are reviewed by a representative panel of experts on water resources,
24 recreation, fisheries, and wildlife throughout the agency to fully evaluate and weight the
25 conservation attributes of each individual parcel.

1 This rating system, which ranks parcels on a number of factors, such as the factors above,
2 the value and cost, and whether the proposed acquisition borders existing state property, provides
3 the most objective means possible of ensuring that DEEP acquires the most important ecological
4 and recreational places. Properties that service two or more functions rank highly on the rating
5 system.

6 DEEP relies on bond funding to sustain land acquisitions for open space. Since 1998, the
7 State Bond Commission has allocated more than \$177 million towards the RNHTP. Yearly
8 funding levels for the RNHTP peaked from 2000-2002 following the year the statutory goal to
9 protect 21 percent of the state was established, but have diminished since (Figure 2).

10 As a result of declining funding allocations for DEEP land acquisitions, the State has had
11 difficulties keeping on track to reaching its share of responsibility for Connecticut's total open
12 space goal. Securing continual funding for the RNHTP will remain a priority for DEEP.
13 Reaching Connecticut's open space goals will require effective cooperation among all land use
14 planning and conservation partners to leverage resources.

15 With the adoption of this Green Plan, and as discussed in Section VI, DEEP will be
16 working to evaluate lands of high-conservation or recreational value. Equipped with this
17 information, DEEP can be more proactive and will seek to contact land owners to determine if
18 they are interested in selling their land for conservation purposes.



I. Cooperators Provision

Partnering with cooperators, including municipalities, non-profit land conservation organizations, utility companies, and federal and other State agencies, is beneficial to the State for acquiring lands for open space purposes. Cost-sharing cooperators allow DEEP to reduce

property acquisition expenses through a statutory provision²³ of the RNHTP that requires a minimum investment from cooperators before the state enters into such agreements.

Designed to stretch State funding for new acquisitions and reduce stewardship costs, the Cooperators provision offers a mutual benefit between the State and one or more of its land conservation partners. When the State and a partner (e.g., a municipality or land trust) have a common desire to protect a certain property but either may not have the resources available to do so, this provision allows the State to enter into stewardship agreements between partners, thus sharing the costs of acquisition and land management.

The responsibility for managing properties acquired in this manner is negotiated between DEEP and the contributing partner(s) involved in the transaction, however, the property is owned by the State. In the case of land donations to the State, a cooperator may steward the property while the State maintains ownership.

With an understanding that DEEP seeks to actively maintain lands for certain uses such as passive recreation and wildlife habitat, contributing partners must enter into a reasonable management agreement with DEEP regarding specific recreational and other activities allowed on a property bought under the provision program.

II. Unique Land Conservation Partnership Examples

➤ Partners in the Northwest: the Litchfield Hills Greenprint Collaborative

The [Litchfield Hills Greenprint Collaborative](#) (Greenprint) is a partnership of over two dozen local land trusts and community leaders in 28 towns committed to protecting land of regional significance across northwest Connecticut. Supported by staff at the non-profit Housatonic Valley Association (HVA), members of the Greenprint share a vision of protecting

²³ (CGS) Sec. 23-79

1 half of the remaining prime farmland, core forestland, and drinking water resources across the
2 Litchfield Hills.

3 This goal equates to more than 150,000 acres protected, and the Greenprint aims to
4 proactively conserve an additional 70,000 acres by year 2030. To this end, members of the
5 Greenprint shares expertise and GIS tools to leverage resources and help its partners make better
6 decisions about land protection in their region.

7 A recent conservation success by the Greenprint was the acquisition of the Itwaka Girl
8 Scout Camp in Norfolk in 2013. Members of the Greenprint worked closely with the Norfolk
9 Land Trust to purchase the property for \$630,000 with \$284,000 in funding from the State Open
10 Space and Watershed Land Acquisition Grant Program, \$157,500 from the federal Highland
11 Conservation Act grant program, and the remainder from private donations.

12
13 ➤ **Partners in the Southeast: the Lower Connecticut River and Coastal Region Land**
14 **Trust Exchange**

15 The [Lower Connecticut River and Coastal Region Land Trust Exchange](#) (LTE) is an
16 informal collaboration of 14 land trusts representing 17 communities of its coordinating
17 organization, the Lower Connecticut River Valley Council of Governments (RiverCOG).

18 The LTE performed a geographic information system analysis to produce a series of
19 maps and a natural resource-based [Strategic Conservation Plan](#) for its region. The maps help
20 members of the LTE make better decisions about land protection by identifying and prioritizing
21 lands that, if protected, will preserve water quality, critical habitats, and working landscapes.
22 The LTE plans to update their planning process with further mapping criteria that could be
23 considered in the acquisition of conservation lands, including proximity to existing open spaces
24 and to State Officially Designated Greenways.

25 As the local municipal planning organization, the RiverCOG will implement the results
26 of the LTE-produced maps to target public outreach and education concerning natural resource
27 protection, best land use and management practices, and land acquisition for open space
28 purposes.

➤ **Partners in Public Utility Companies: Eversource Energy**

In 2013, DEEP worked with Eversource Energy (formerly Northeast Utilities) to extend a Memorandum of Understanding (MOU) that gives DEEP, municipalities, and land trusts the right of first refusal to acquire parcels on “the Conservation List” should the company put them on the market for sale.

The Conservation List consists of 375 Eversource Energy properties totaling approximately 9,500 acres that were identified by DEEP as desirable for acquisition as open space because of their high value for public recreation, natural resource conservation and ecological preservation.

To originally expire on June 30, 2014, the MOU was extended for another decade through 2024 as a part of the State’s settlement of the NU-NSTAR merger in 2012. The settlement also formed the [Eversource Land Trust](#), which in 2013 permanently protected 4 parcels totaling nearly 1,000 acres from the Conservation List.

B. State Open Space and Watershed Land Acquisition Grant Program

The DEEP-administered [Open Space and Watershed Land Acquisition Grant Program](#) (OSWA) leverages state, local, and private funds to create a cooperative open space acquisition program for Connecticut. This program was initiated in 1998 after the General Assembly followed through with a recommendation made by the Governor’s Blue Ribbon Task Force on Open Space, which was organized to examine ways to achieve the then-new state open space goal.

Through OSWA, DEEP awards grants to municipalities and land trusts for the acquisition of open space and to water companies for the acquisition of Class I and II watershed lands²⁴.

OSWA is funded by state bonding and the Community Investment Act, a program enacted in 2005 with the passage of [Public Act No. 228](#) to create a dedicated funding source to support four

²⁴ (CGS) Sec. 7-131d

public policy priorities: open space, agricultural preservation, historic preservation, and affordable housing.

Since 1998, DEEP has awarded over \$100 million in open space grant funding towards the protection of over 30,000 acres and 18 urban greens and community gardens in 130 cities and towns. Between 2007 and 2015, nearly 13,000 acres in over 51 towns were protected with over \$53 million in funding from OSWA (Table 2). Over 100 acres were protected in urban communities, thereby providing public open space access to Connecticut's more densely populated places.

Table 2. Summary of projects closed under the State Open Space and Watershed Land Acquisition Grant Program: 2007-2015.			
Year	Projects Closed	Acres Protected	Grant Amount
2007	31	1,720.80	\$6,965,235
2008	43	1,909.35	\$11,085,820
2009	17	1,452.99	\$5,799,228
2010	26	1,316.01	\$6,887,200
2011	23	1,603.67	\$7,560,342
2012	11	740.33	\$2,045,478
2013	15	1,230.87	\$2,896,150
2014	16	1,541.53	\$3,807,960
2015	19	1,424.47	\$6,098,633
Totals	201	12,940.02	\$53,145,779

In return for grants, the State of Connecticut receives a permanent conservation and public access easement on property acquired through OSWA to ensure that the property is protected and available to residents as open space in perpetuity. Where development rights are to be purchased, the State will become an equal holder of those rights as a substitute for the easement. In the case of land acquired for water supply protection, a water company may jointly hold an easement with the State or a non-profit organization.

1 Class I watershed land is sometimes exempt from the public access requirement for
2 health and safety reasons. DEEP is also willing to accept limited public access, at the discretion
3 of the Commissioner, when a conservation easement is purchased on land where general public
4 access would be disruptive of agricultural activity.

5 The OSHA provides municipalities, non-profit land conservation organizations, and
6 water companies with up to 65 percent of either fair market value of development rights or
7 purchase price for property. Projects in distressed municipalities²⁵ or targeted investment
8 communities are provided up to 75 percent of the purchase price (Table 3). Grants under this
9 program are made for the purchase of land that is one or more of the following:

- 10 1. Valuable for recreation, forestry, fishing, conservation of wildlife or natural resources;
11
- 12 2. A prime natural feature of the state's landscape, including, but not limited to, a
13 shoreline, a river, its tributaries and watershed, an aquifer, mountainous territory,
14 ridgelines, an inland or coastal wetland, a significant littoral or estuarine or aquatic site
15 or other important geological feature;
16
- 17 3. Habitat for native plant or animal species listed as threatened, endangered or of special
18 concern;
19
- 20 4. A relatively undisturbed outstanding example of a native ecological community which
21 is now uncommon;
22
- 23 5. Important for enhancing and conserving water quality;
24
- 25 6. Valuable for preserving local agricultural heritage; or
26
- 27 7. For cases involving water companies, eligible to be classified as Class I or Class II
28 watershed land.
29

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²⁵ Defined in (CGS) Sec. 32-9p(b). A current listing of these communities can be found [here](#).

Table 3. DEEP approval of Open Space and Watershed Land Acquisition Grants.		
Grant Sponsor	Acquisition Purpose	Grant Amount Not to Exceed*
Municipality	Open space	65% of fair market value
Municipality	Class I & Class II Water supply property	65% of fair market value
Distressed municipality or targeted investment community +	Open space	75% of fair market value
Distressed municipality or targeted investment community +	Resource enhancement or protection	50% of cost of such work
Nonprofit land conservation organization	Open space or watershed protection	65% of fair market value
Non-profit land conservation organization and water company (If land is located within a distressed or targeted community)	Open space or watershed protection	75% of fair market value
Water Company	Class I & Class II water supply	65% of fair market value

* The percentages shown represent the maximum grant award, and grant awards may be reduced to a lesser percentage or may be reduced to not exceed an administrative cap.

+ A current listing of these communities is found [here](#).

Urban Green and Community Garden Grants

Due to a renewed focus on urban green space and community gardens, distressed municipalities and targeted investment communities are eligible to receive grants to develop or enhance urban open space for public enjoyment and/or environmental education. The promotion of open space in an urban setting may include but it may not be limited to the development of a community garden or reclaiming and enhancing existing open space to allow public use.

Awards are given to those projects that demonstrate the highest ability to benefit urban communities in close proximity to population centers. Since 2007, UGCG has granted over \$1 million in cities including Bridgeport, Bristol, Enfield, Hamden, Hartford, New Haven, New London, Norwalk, Putnam, South Norwalk, and Windham. These grants funded the creation or enhancement of education centers, greenhouses, and ADA-accessible walkways and raised bed gardens for children, the disabled, and senior citizens.

Every project completed with funding assistance from OSWA and the Urban Green and Community Garden Grant programs contribute to the conservation of environmental and cultural resources, ensure universal access whenever possible, and enhance the quality of life of the state and local communities.

C. Federal Funding Programs for Open Space Acquisition

The federal programs discussed below are only a sample of the funding assistance programs that exist to aid the State and its land conservation partners in open space acquisition. All programs are subject to availability each year due to variable federal budget allocations.

DEEP encourages its partners to explore these opportunities and more. Because application requirements may differ among programs, should DEEP's partners choose to apply for federal funding in addition to a State open space grant, they should make sure they understand and fulfill any requirements necessary for those programs, as well as those for the State open space grant. Partners should also exercise caution to ensure that acceptance of federal funding would not place a restriction on the property that could be in conflict with the State's conservation and public access easement requirements.

I. Coastal and Estuarine Land Conservation Program (CELCP)

Organization / Agency: The National Oceanic and Atmospheric Administration's Office of Ocean and Coastal Resource Management (NOAA-OCRM), administered by DEEP's Office of Long Island Sound Programs.

Program Purpose: To protect important coastal and estuarine areas that have significant conservation, recreation, ecological, historical, or aesthetic values, or that are threatened by conversion from their natural or recreational state to other uses, giving priority to lands which can be effectively managed and protected and that have significant ecological value²⁶.

Eligibility: Available program funds are administered through a competitive state grant program. In order to receive CELCP coastal land acquisition funding through the state grant program, coastal states are expected to:

- Develop a state CELCP Plan for approval by NOAA-OCRM;
- Solicit land acquisition project proposals from stakeholders (e.g., coastal municipalities, land trusts, state agencies) consistent with the conservation priorities outlined in its CELCP Plan;

²⁶ Public Law 107-77

- Nominate its highest priority coastal land acquisition projects for review by a national project review selection committee; and
- Successfully compete with other coastal state land acquisition project proposals pursuant to a national review committee's ranking process.

Example of Success in Connecticut:

The East River Marsh Complex is an estuarine embayment within the LIS estuary, one of only 28 estuaries with EPA's National Estuary Program. In 2009, the Town of Guilford purchased approximately 631 acres of open space in this complex, completing one of the largest coastal land projects in the history of the State's coastal management program.

Now known as the East River Preserve, the purchase was significant not only for its size, but also for the protection of coastal forest, inland wetlands, tidal marshes, open fields, and passive recreational use along the East River. Of the 631 acres, 48 are protected under two conservation easements jointly held with DEEP. The property was acquired with the assistance of a \$3 million grant from the federal CELCP.

II. Long Island Sound Study (LISS)

Organization / Agency: A partnership among the U.S. Environmental Protection Agency and the States of Connecticut and New York.

Program Purpose: The LISS administers several grant programs aimed at uniting a wide range of government agencies, universities, businesses, and community groups in protecting the Sound, giving priority to issues surrounding coastal and estuarine habitat acquisition and restoration, management planning, water quality monitoring, and public involvement and education.

Eligibility: Depends on grant program, but all projects must implement the goals and recommendations contained in the Comprehensive Conservation Management Plan for LIS. For example, for the LISS Futures Fund, non-profit organizations, academic institutions, and state, tribal and local governments are allowed to apply. Applicants to both large and mini-grants are required to provide a 25% match of total project costs.

Example of Success in Connecticut:

Table 4. Recent State land acquisitions made with assistance from the U.S. Environmental Protection Agency's Long Island Sound Study grants.*					
Property Name	Town	Year Purchased	Award (\$)	Size (acres)	Purpose of Acquisition
Crowley	Stonington	2009	650,000	48	Addition to Barn Island WMA
The Sheep Farm and Fort Hill Brook Ecosystem Preservation	Groton	2010	82,200	63	To protect a colonial-era sheep farm and high-quality habitat.
Griswold Airport	Madison	2010	260,000	17	Adjacent with tidal wetlands at Hammonasset Beach SP.
Matson	Stonington	2011	250,000	6	Addition to Barn Island WMA
Hansell / Olsen	Voluntown and North Stonington	2013	172,138	101	Addition to Pachaug SF
Sciongay	Westbrook and Clinton	2013	1,200,000	149	Protection of LIS and public water access

* Title to properties acquired not necessarily held by DEEP.

III. Highland Conservation Act Program

Organization / Agency: The U.S. Forest Service (USFS) and Department of the Interior (DOI).

Program Purpose: The Highland Conservation Act provides funding for the acquisition of lands or interest in land that are important for the water, forest, agricultural, wildlife, recreational, and cultural resources of the U.S. Highlands Region in the states of Connecticut, New York, New Jersey, and Pennsylvania. The Connecticut Highlands is a triangle around the northwest corner bounded by the state lines to the west and north, from Torrington to Danbury.

Eligibility: Each year, the Highland states, or any agency or department of any Highlands state with authority to own and manage land for conservation purposes, applies to DOI for acquisition project funding. They may submit applications individually or jointly for conservation partnership projects.

The DOI issues grants to the states or their entities for the acquisition of land, or interest in land, for conservation purposes in the Highlands. Project funding is not to exceed 50% of the total cost, and projects must be consistent with areas identified in the Connecticut and Pennsylvania Update as having high resource value (USFS 2010).

Example of Success in Connecticut:

Table 5 lists land acquisition projects in Connecticut funded in part by the Highland Conservation Program. Federal funding allocations have been variable; no funding was allocated in Federal Fiscal Years (FFY) 2011, 2013, or 2014.

To be distributed among the Highland states, \$3 million was authorized by Congress for FFY 2015. DEEP plans to use its allocation within the Cameron's Line Project Area, and continues to prepare high-ranking projects for future grant application submissions.

Table 5. U.S. Forest Service Highland Conservation Act grants made to DEEP since 2008.

Project	Town	Fee or Easement	Year Purchased	Size (acres)	Award (\$)	Total Purchase Price (\$)
Deluca	Cannan, Cornwall	Fee	2008	308	492,750	3,300,000
Naromi	Sherman	Easement	2008	80	246,100	746,100
Ethel Walker	Simsbury	Easement	2009	49	241,666	1,890,000
Girl Scout Camp Iwatka (Pine Mountain)	Norfolk	Easement	2010	317	157,500	315,000
Erich Woods	Winchester	Easement	2010	261	170,100	910,000
Girl Scout Camp Francis	Kent	Easement	2014	249	520,000	1,040,000
Cameron's Line Project Area	TBD in 2015					

IV. Land & Water Conservation Fund (LWCF)

Organization / Agency: The U.S. National Park Service (NPS).

Program Purpose: Provides matching grants to States and local governments for the acquisition and development of public outdoor recreation areas and facilities (as well as funding for shared federal land acquisition and conservation strategies).

Every year, funding is allotted and states are required to spend the amount within three years, otherwise it is returned to the federal government for other uses. The program is intended to create and maintain high quality recreation areas and facilities and to stimulate non-federal investments in the protection and maintenance of recreation resources across the U.S.

Eligibility: States, including Connecticut, receive an annual allocation of LWCF grant funds based on a national formula (largely based on population), and develop an Open Project Selection Process in order to solicit, rank, and select projects within their borders for nomination to the highly competitive, NPS project selection cycle.

To be eligible for grants, every State must prepare and regularly update a statewide recreation plan. Connecticut's Statewide Comprehensive Outdoor Recreation Plan was submitted to NPS in 2011.

Example of Success in Connecticut:

1 Since 1965, the NPS has awarded Connecticut over \$64.3 million in LWCF grants. In
2 2008, DEEP purchased approximately 143 acres at the former Sunrise Resort in East Haddam
3 with over \$1.9 million in grant funding from the LWCF. The property would become an
4 addition to Machimoodus State Park and protects over 4,700 feet of additional frontage along the
5 Salmon River.

6 Connecticut's LWCF grant balance as of 2013 (\$2,084,408) was used towards the
7 purchase of land or interest in land in 2014 and 2015: "The Preserve," (\$1,400,000) a nearly
8 1,000-acre coastal forest that DEEP, the Town of Old Saybrook, The Trust for Public Land, The
9 Nature Conservancy, the Essex Land Trust, and other conservation groups have collaborated to
10 protect, and the Saner Property in Marlborough (\$684,408). The Saner Property, purchased in
11 fee and added to the Salmon River State Forest, provides recreational opportunities and
12 protection of a major river tributary.
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15 **V. National Recreational Trails Program (RTP)**

16 Organization/Agency: The U.S. Department of Transportation Federal Highway Administration
17 (FHWA), administered through DEEP.
18

19 Program Purpose: Provides funding for everything related to recreational trails in the state
20 including acquisition of land or easements for a trail or trail corridors, and trail
21 construction, maintenance, access to trails by persons with disabilities, and education
22 projects. About \$1 million is given to organizations for various trail projects every year.
23

24 Eligibility: DEEP awards may be made to any private non-profit organization, municipality,
25 federal agency, or tribal government. The program will provide up to 80% of the project
26 cost and requires a 20% match from applicants.
27

28 Example of Success in Connecticut: 29

30 Table 6 below shows a small selection of recent RTP grants made by DEEP to various
31 non-profit groups and a municipality. Additional examples of previously funded projects can be
32 found by visiting DEEP's [RTP webpage](#).
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Table 6. Recent DEEP grants awarded under the U.S. Federal Highway Administration's National Recreational Trails Program.
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Applicant	Year	Project	Requested Federal Share (\$)	State/Local Share (\$)	Total Project Cost (\$)
Town of Cheshire	2010	3,500-ft extension of the Farmington Canal Trail / East Coast Greenway	250,000	1,425,000	1,675,000
Save Ocean Beach, Inc.	2011	Installation of a 1,000-ft. ADA compliant connector trail along Alewife Cove	43,320	10,830	54,150
The Last Green Valley, Inc.	2011	To design a network of accessible "blueway" waterfront trails	87,100	21,775	108,875
Town of Colchester	2012	Airline State Park Trail trail head parking lot and driveway improvements	20,000	5,000	25,000

D. Working Farm and Forest Programs

I. Federal Forest Legacy Program

Organization / Agency: The U.S. Forest Service (USFS).

Program Purpose: Protects working forest lands from conversion to non-forest uses by assisting landowners in placing conservation easement restrictions on their forests, and on the rare occasion, for the purchase of forest land outright.

Eligibility: Property must be a working forest that protects water quality, wildlife habitat, forest products, outdoor recreation, and other public benefits within a designated Forest Legacy Area, threatened by development or conversion to non-forest uses, abut or in close proximity to existing protected spaces, have other unique qualities such as a viewshed or known population of rare, threatened, or endangered species.

The USFS may fund up to 75% of program costs, with at least 25% coming from private, state or local sources (USFS 2014). Projects must have a Forest Stewardship Plan before closing.

Example of Success in Connecticut:

Shown in Table 7 below, 30 tracts totaling 8,125 acres have been protected in Connecticut with the assistance of over \$8.3 million from the FLP (USFS 2014).

Table 7. Connecticut completed U.S. Forest Service Forest Legacy Tracts as of September 2013.

Tract Name	Year	Fee or Conservation Easement (CE)	Size (acres)	Purchase Price (\$)	Payment Amount (\$)
Maplewood Farm	1995	CE	172	210,000	210,000
Great Mountain Forest (2 tracts)	2003	Fee	5,528	5,453,000	4,089,000
Housatonic	2000	Fee	204	410,000	0
Skiff Mountain (6 tracts)	2009	CE	705	8,445,000	1,733,000
Pootatuck	2005	Fee	45	312,000	0
Nepaug	1999	Fee	27	45,000	0
Mattatuck	1999	Fee	55	170,000	0
Naugatuck	1999	Fee	27	85,000	0
Shenipsit	2000	Fee	311	597,000	0
Salmon River	2000	Fee	158	315,000	0
Meshomasic (3 tracts)	1999-2000	Fee	128	260,000	0
Peaceful Hill	2005	CE	35	217,000	163,000
Pine Brook	1999	CE	126	100,000	100,000
Stonehouse Brook (7 tracts)	2005	CE	478	795,000	596,000
Pogmore	1995	CE	53	80,000	80,000
Tulmeadow Farm	2011	CE	73	2,830,000	1,415,000
Totals:			8,125	\$20,324,000	\$8,386,000

II. Connecticut Farmland Preservation Program (FPP)

Organization / Agency: The Connecticut Department of Agriculture (DoAg).

Program Purpose: Protects active farms with the best and most productive agricultural land. It also leases to farmers state-owned agricultural lands with the cooperation of other agencies that may have custody and control of such lands.

Eligibility: Among other criteria, private landowners may apply if their property is an active farm operation, includes a minimum of 30 acres of cropland or is adjacent to a larger parcel, meets a minimum criteria for amount of prime and important farmland soils, and is nearby other active farms. The state may pay up to 100% of the value of the property's development rights, and applicants must meet requirements of the program if federal funding will be used as part of the sale.

Example of Success in Connecticut:

As of early 2013, FPP has helped DoAg acquire the development rights for 297 farms totaling 37,665 acres. Between 2007 and 2013, 69 farms and over 8,000 acres of active and productive farmland were protected (Table 8) (CT DoAg 2013). More than half of the lands protected have soils classified as prime and important farmland soils.

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Table 8. Farms protected through the Connecticut Farmland Preservation Program: 2007-2013.			
Year	Number of Farms	Acres	Cost
2007	11	1,186	\$5,504,372
2008	7	675	\$3,785,198
2009	10	1,370	\$7,179,659
2010	15	1,228	\$6,955,585
2011	16	1,969	\$11,922,061
2012	5	610	\$4,165,574
2013	5	1,170	\$2,738,178
Totals	69	8,208	\$42,250,627

V. Purpose of, and Need for, Protected Open Space

This section briefly describes Connecticut’s critical natural resources and the co-benefits they provide to the environment and the public. Co-benefits, also known as ecosystem services, are the benefits provided to people as a result of intact and functional environmental systems, including, but not limited to air and water purification, plant and animal biodiversity, pollination services, scenic beauty, sense of place, and natural-resource based outdoor recreation and education.

Ultimately, quality public health and welfare cannot be maintained in an environment that does not provide these interconnected ecological, societal, and individual benefits. For example, during a rain storm water infiltrates the ground and becomes cleaned by spongy forest soils, which can then enter the public drinking water supply.

But as forest and natural ground cover is developed into hard, impermeable surfaces, storm water runs over the ground and causes local flooding and pollution to drain into the Long Island Sound. Continued efforts to protect these land cover types and other natural resources will ensure that they are kept healthy and abundant now and for the future.

A. Natural Heritage Resources

Plant, fish and wildlife species are interconnected and create a biodiverse and resilient landscape capable of providing essential ecosystem services for people. The 2015 [Connecticut Wildlife Action Plan](#) provides detailed information on key habitat types, conservation guidelines, and strategies for the maintenance of species populations in the state, including the acquisition of certain lands for the protection of habitat. The sections that follow generally describe some of the state’s important or unique habitats having high value for conservation as open space.

I. Freshwater and Inland Wetland Habitats

Connecticut has approximately 65,000 acres of lakes, ponds, and reservoirs and 5,830 miles of rivers and streams. About 450,000 forested and non-forested inland wetlands are also distributed across the state. These natural water resources provide essential habitat for a large diversity of invertebrates, fish, and other wildlife species such as mink and great blue herons. Many inland wetland types are rare or specialized habitats, providing the only areas in which certain amphibians breed or spend their entire life cycles.

Moreover, the quality and safety of the state's [drinking water supplies](#) is dependent on functioning freshwater and wetland habitats. Intact wetlands, free-flowing water courses, and vegetated river corridor lands promote water infiltration and protect surface and underground water supplies from increased sedimentation and runoff pollution and contamination.

Freshwater and inland wetland habitats and their associated wildlife are interrelated, sensitive systems which are easily degraded or lost through land development. Over the last 20 years, Connecticut experienced a considerable amount of development on lands that were or next to freshwater resources. A study on statewide land cover changes in riparian corridors by the [Center for Land Use Education and Research](#) found that between 1985 and 2006, Connecticut gained 19,000 acres of developed land within a 300-foot zone adjacent to rivers and streams (Wilson and Chester 2011).

As development replaces natural ground cover in riparian zones, the area of impervious surfaces increase. Removal of vegetative cover from these areas causes cold waters to warm, thus rendering habitat unsuitable for native trout, aquatic insects, and other dependent wildlife species. Stream banks become unstable, soils harden, and therefore less rainfall is absorbed into

the ground, which causes flooding. Storm water runoff frequently carries sediment and pollutants from paved areas into catch basins, drains, and ultimately the nearest watercourses.

Land conservation can protect freshwater and wetland habitat quality and integrity. The acquisition of lands having high value for conserving freshwater habitat resources, such as forested lands adjacent to rivers, cold water streams, and lakes can serve to create buffers from impacts by water warming, surface runoff pollution, stream flow alterations, and other threats.

Connecticut Key Lands for Conservation

Cold Water Streams Crucial for Native Brook Trout

As Connecticut's only native trout species, wild brook trout are important to the state's recreational fishing season and overall fish biodiversity. These trout are dependent on cold, free-flowing streams, which are kept cool by trees and other vegetated cover along the stream corridors. Development on or nearby cold water streams reduces vegetative cover and increases bank erosion, thus rendering habitat unsuitable for these fish and other aquatic species.

The Connecticut Green Plan places high conservation value on undeveloped lands in stream drainage basins with a higher percentage of forest cover, or potential for forest cover restoration, to mitigate the loss or alteration of cold water habitat and strengthen brook trout population resiliency.

DEEP is partnering with the U.S. Geological Survey's Silvio O. Conte Anadromous Fish Branch laboratory and University of Massachusetts at Amherst to develop online tools to show predictions of stream temperature changes and brook trout occupancy under various land management scenarios. Because wild brook trout are widely distributed, closely monitored, and sensitive to changes in stream flow and temperature, their occupancy in streams is a useful indicator for quality cold water habitat in the state (Beauchen et al. 2014).

The model, still in development, will soon enable DEEP and other decision makers to examine how brook trout populations may respond to changes in air temperature, precipitation, stream flow, the amount of forest nearby streams, and other factors (Beauchen et al. 2014; Letcher 2014).

Figure 1 below illustrates a portion of this work in progress and predicts brook trout sensitivity to climate change in stream basins they are likely to occur. In the map, occupancy in basins already experiencing habitat degradation (yellow polygons) will diminish or disappear as ambient air temperatures increase. Occupancy in basins with higher habitat quality (greener polygons), such

as higher forest cover to infiltrate water and keep streams cool, will be able to sustain rises in air temperature.

Though this map is only a snapshot of what will eventually be a dynamic model, it can be useful when used in conjunction with other maps such as land cover and stream temperature classification to prioritize the acquisition of lands for cold water habitat conservation in the state.

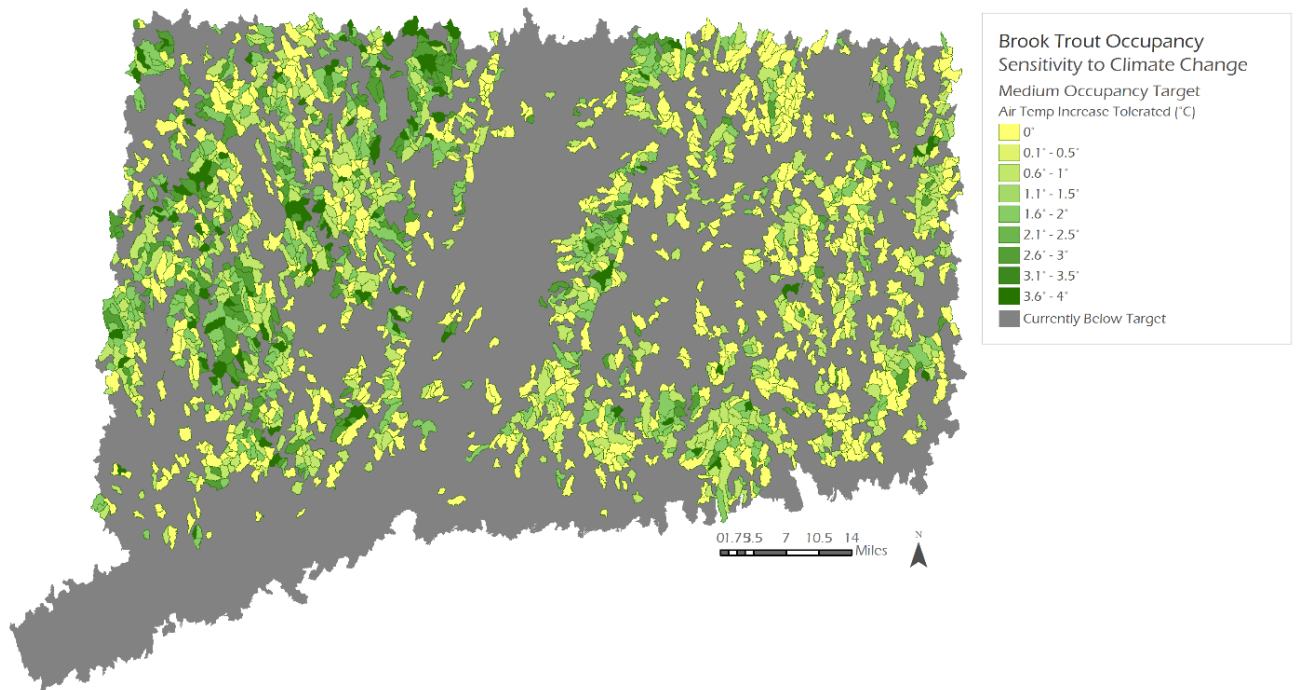
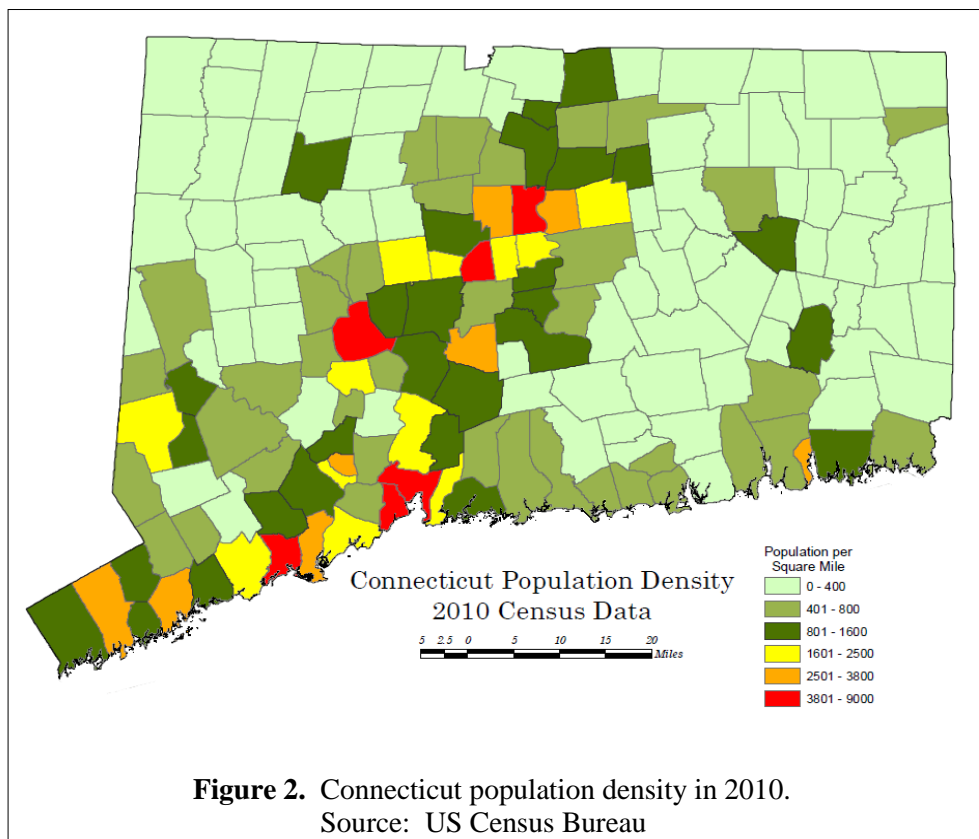


Figure 1. Brook trout sensitivity to climate change in stream basins they are likely to occur. Trout occupancy in basins already experiencing habitat degradation (yellow polygons) will diminish or disappear as ambient air temperatures increase. Occupancy in basins with higher habitat quality (greener polygons), such as higher forest cover to infiltrate water and keep streams cool, will be able to sustain rises in air temperature. Map assembled by Letcher 2014.

II. Coastal Habitats

Coastal habitats including beaches and dunes, tidal wetlands, and estuary embayments provide unique ecosystem benefits, such as feeding and breeding areas for dependent wildlife, water purification, and carbon storage by soil and vegetation. The Long Island Sound is the state's largest natural resource forming about 250 miles of Connecticut's shoreline and providing habitat to more than 1,300 species of wildlife while also providing recreational benefits to millions of people each year (LISS 2015).

Impacts by climate change, land development, and pollution all pose difficult challenges to maintaining coastal habitat integrity and ability to function. The coastline hosts the most densely populated towns in Connecticut (Figure 2). To make way for this development and related roadway construction, impervious surfaces replaced coastal fields, coastal forests were cut, tidal wetlands dredged or filled, and wildlife and ecosystem services lost.



1 Pollution runoff from both developed lands along the shore and farther inland can lead to
2 coastal habitat quality impairment. Storm water runoff, as well as nutrient runoff from
3 wastewater treatment plants and agricultural fields, reach the Sound and frequently cause severe
4 oxygen starved and contaminated conditions that inhibit wildlife from thriving (DEEP 2012;
5 LISS 2015).

6 Compounding the issue of pollution, climate change is visibly and measurably impacting
7 the state's coastal resources. Long Island Sound's waters are warming and causing fish and
8 other species communities to shift. These shifts can disturb the overall marine ecosystem and
9 discourage the public from enjoying saltwater fishing and shell fishing opportunities.

10 Sea-level rise caused by climate change will submerge many coastal habitats. Marsh
11 drowning, whereby tidal marshes become flooded more frequently, is a critical threat to the long-
12 term survival of many tidal marsh wildlife species. For example, Connecticut's tidal marshes are
13 home to half of the world's only breeding population of saltmarsh sparrows (SHARP 2013).
14 Because they nest in tidal marsh grasses, tide height and flooding frequency are important
15 drivers of breeding success for these special sparrows (Bayard and Elphick 2011; Gjerdrum et al.
16 2008).

17 The strategic acquisition and conservation of lands having important natural coastal
18 resources keeps these resources safe, clean, functional, and available for future generations. For
19 instance, the protection of inland unfragmented forest core lands and vegetated stream buffers
20 helps to absorb and filter water, thus reducing pollution carried downstream into Long Island
21 Sound. The protection of uplands adjacent to the state's existing tidal marshes will be necessary
22 to create and maintain this critical habitat as sea levels rise over time.

Connecticut Key Lands for Conservation

Saving Tidal Marsh Migration Areas using Sea-level Rise Models

[Text under draft]

III. Forested Upland Habitats

Upland forest is the predominant land cover type in Connecticut with deciduous, coniferous, and forested wetland habitat communities covering 59 percent of the state. DEEP's [Forest Action Plan](#) (formerly known as the Forest Resource and Assessment Strategy), currently undergoing revision²⁷, identifies key forest-related issues and priorities to support development of long-term state strategies that will conserve forests from loss or degradation, protect working forestland, and enhance public benefits from trees and forests.

Large-scale and intact forests provide key habitat linkages for common and declining wildlife species, such as thrushes and owls, bobcats, innumerable insects, and newts and salamanders. In addition, forests add immensely to the quality of life for the state's residents. The ecosystem benefits this system provides are seemingly endless – forests absorb rainwater and slow runoff, reduce flooding, filter pollutants from the air, water, and soil, regulate air and water temperatures, supply outdoor recreational opportunities, and more.

One of the most critical benefits provided by forests is their ability to sequester or store carbon. Carbon dioxide is a greenhouse gas that contributes to climate change. Trees and other forest vegetation take in carbon from the air and store it within their roots, stems, and leaves. Carbon is sequestered by soils on the forest ground floor, as well. These services help to remove carbon from the atmosphere and reduce the state's greenhouse gas emissions.

Changes in climate and habitat loss impact the ability of forests to function and effectively sequester carbon. A study on statewide forest fragmentation by the [Center for Land Use Education and Research](#) found that between 1985 and 2006, Connecticut lost 168,960 acres of core forest (forest that is at least 300 feet from a non-forested habitat type) to housing

²⁷ Submitted to the U.S. Department of Agriculture's Forest Service as a requirement for federal funding for land acquisition and other support.

development or other uses (Wilson and Chester 2009). The loss or degradation of forest is the leading cause of population declines of many treasured wildlife species, and the loss of forested cover reduces the landscape's ability to remove carbon from the atmosphere.

Changes in temperature and precipitation patterns for the region as a result of climate change will shift the distributions of forest tree species northward or upslope, increase the frequency and magnitude of pest insect or disease outbreaks, and introduce new invasive species and/or intensify the impacts of existing invasive species (Wilkerson et al. 2013). Each of these will not only dramatically alter the habitat types available to dependent wildlife species, but also affect sustainable timber harvest practices conducted by the State and private landowners.

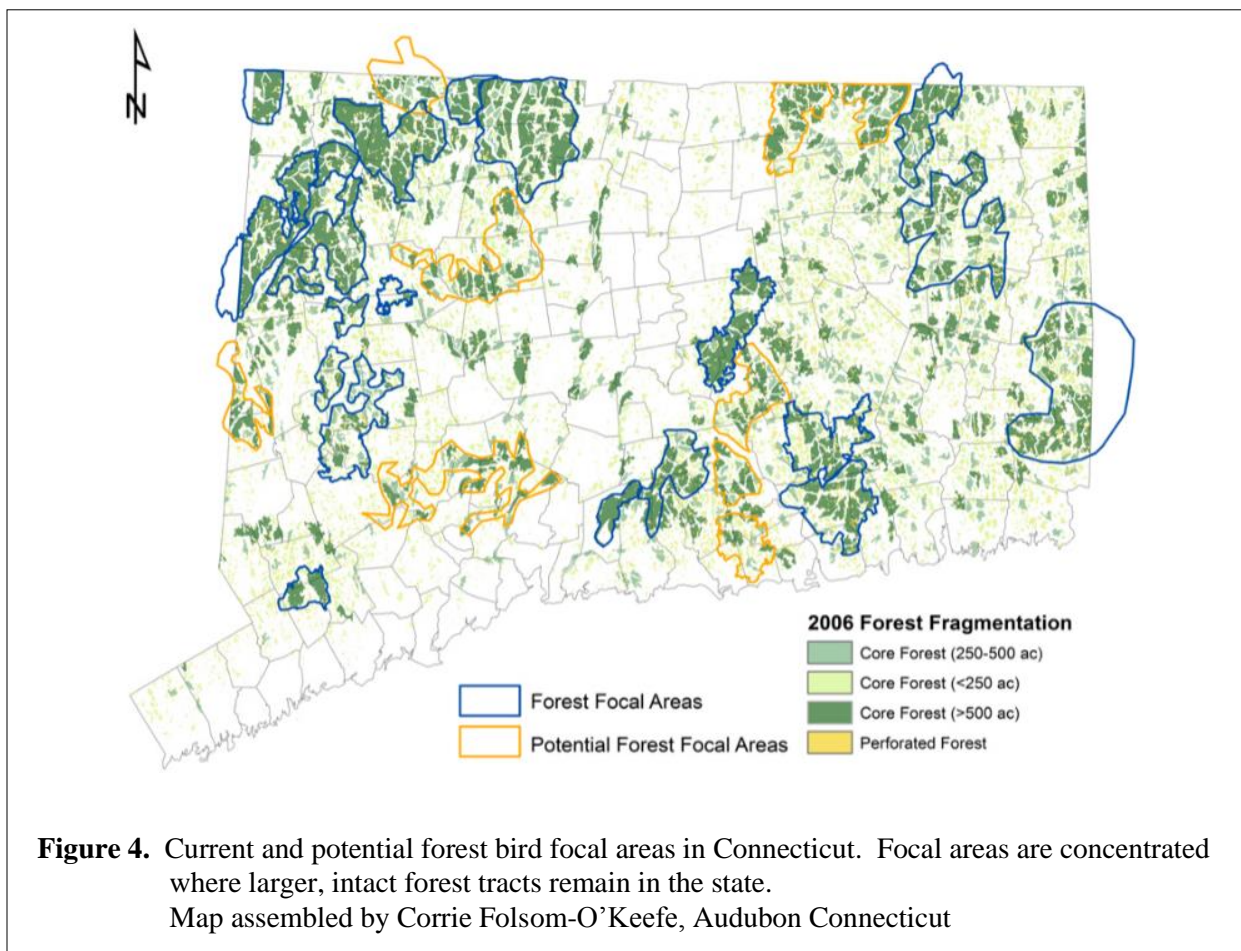
Connecticut Key Lands for Conservation

Core Forest Blocks Benefit Birds

Birds are the most common wildlife group within forest communities. Forest birds depend on large tracts of connected forest for stopover sites during migration and breeding habitat to raise their young. However, populations of forest breeding birds are declining due to habitat loss and deforestation as a result of land development and climate change.

The protection of extensive tracts of forest can help to provide sufficient habitat for birds and other wildlife that also depend on this land cover type. Several remaining core forest blocks (blocks of forest at least 300 feet away from non-forest land cover types) have been identified by Audubon Connecticut as focal areas for the conservation of declining interior forest bird species (Figure 4), such as the iconic, flute-like singing Wood Thrush.

Protecting habitat for birds like the Wood Thrush benefits species that have similar habitat requirements. Wood Thrush prefer to nest in large, deciduous forests with leafy understories. They are considered umbrella species that if protected for, will indirectly protect the many other bird species and other wildlife that make up the community of this habitat, as well.



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IV. Ridgeline & Declining Upland Habitats

Upland grasslands and shrublands, sand barrens and sparsely vegetated sand or gravel, and traprock ridges, cliffs, and talus slopes are unique land covers in Connecticut that provide critical habitat for many rare or declining plants and wildlife. They also add highly valued scenic diversity to the state's mostly forested landscape.

Early successional habitats such as warm and cool season grasslands, old fields, and shrublands provide an abundance of food, cover, and shelter for distinct assemblages of wildlife specifically adapted for these habitats, such as Eastern Meadowlarks, Prairie Warblers, and New England Cottontail rabbits.

Sand barrens occur in dry sandy areas such as outwash plains and ancient lake deltas, and have poor quality soils which create restrictive growing conditions for most vegetation types. One of the most important functions of sand barrens is their ability to support obligate moth and butterfly, tiger beetle, and other invertebrate species of greatest conservation need.

Early successional and sand barren habitats are among the most imperiled in the world due to habitat loss as a result of a combination of factors including land development or conversion to other uses, natural forest succession, and, in the case of man-made grasslands, intensified agricultural management practices (i.e., heavier grazing or more frequent mowing).

Protecting these habitats necessitates acquiring the appropriate lands they exist or can exist on, fostering meaningful relationships with landowners who may help to manage for such lands, and ensuring adequate long-term management to maintain their early successional states. Without these measures, the rare species that depend on these habitats, and the viewsheds these lands afford, will disappear.

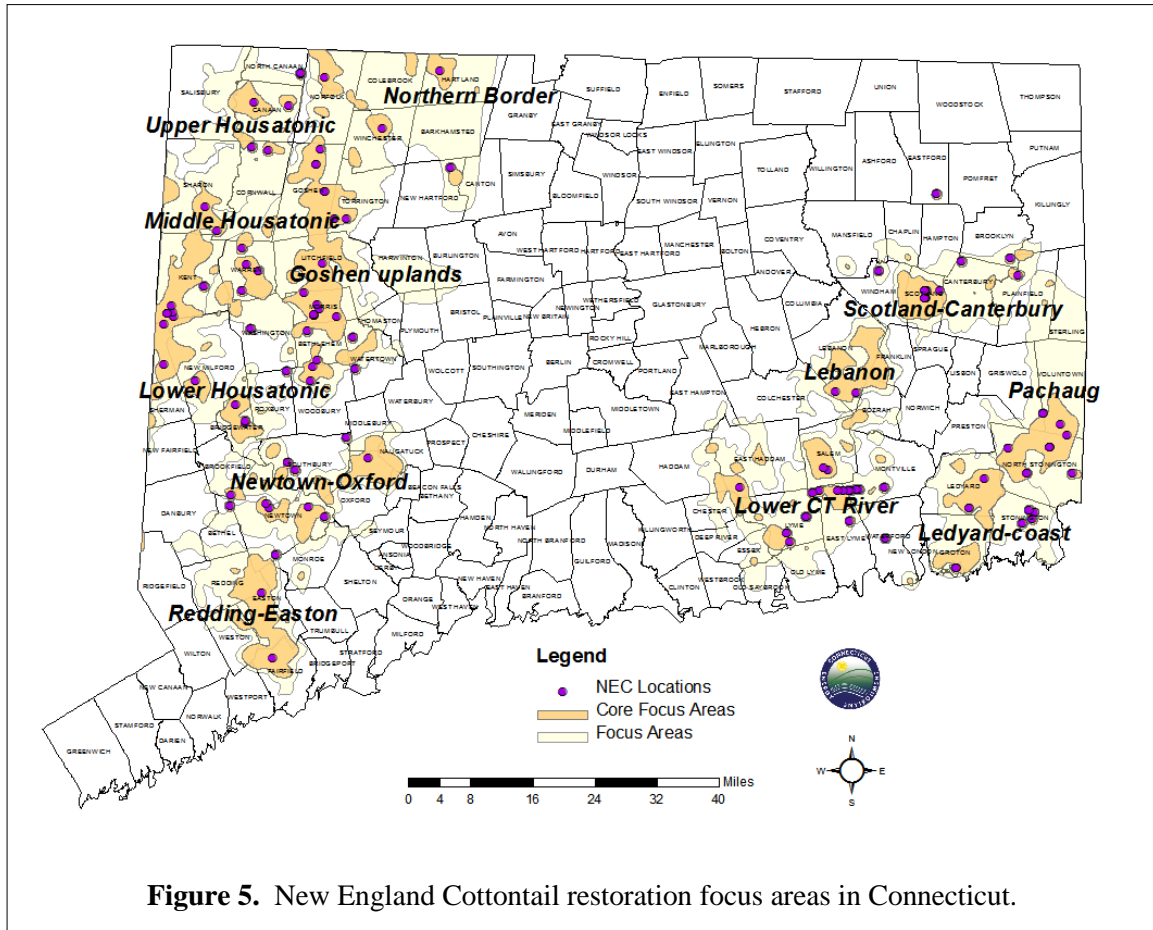
Connecticut Key Lands for Conservation

Early Successional Habitats Help Native New England Wildlife

New England Cottontails are Connecticut's only native rabbit species and depend on brush, shrubs, thickets, and young forest, generally known as early successional habitat, for food and shelter from predators. The New England Cottontail was once common throughout New England and eastern New York, but due to factors including habitat loss and fragmentation, the range of this rabbit has declined significantly.

In 2006, the species was designated as a Candidate for Threatened or Endangered Status under the federal Endangered Species Act. To combat their population declines, the [Regional New England Cottontail Initiative](#) (Initiative) was established in 2011, of which DEEP Wildlife is a partner agency.

This multi-state Initiative established twelve core focal areas for New England Cottontail conservation in Connecticut. Within these, the Initiative has a sub-goal of creating and/or managing between 19,000 and 24,000 acres of new or existing early successional habitat that could support the rabbit. In particular, the acquisition of lands within a one-half mile radius of the 122 sites where New England Cottontail habitat use has been documented in Connecticut can proactively protect habitats necessary for these rabbits (Figure 5).



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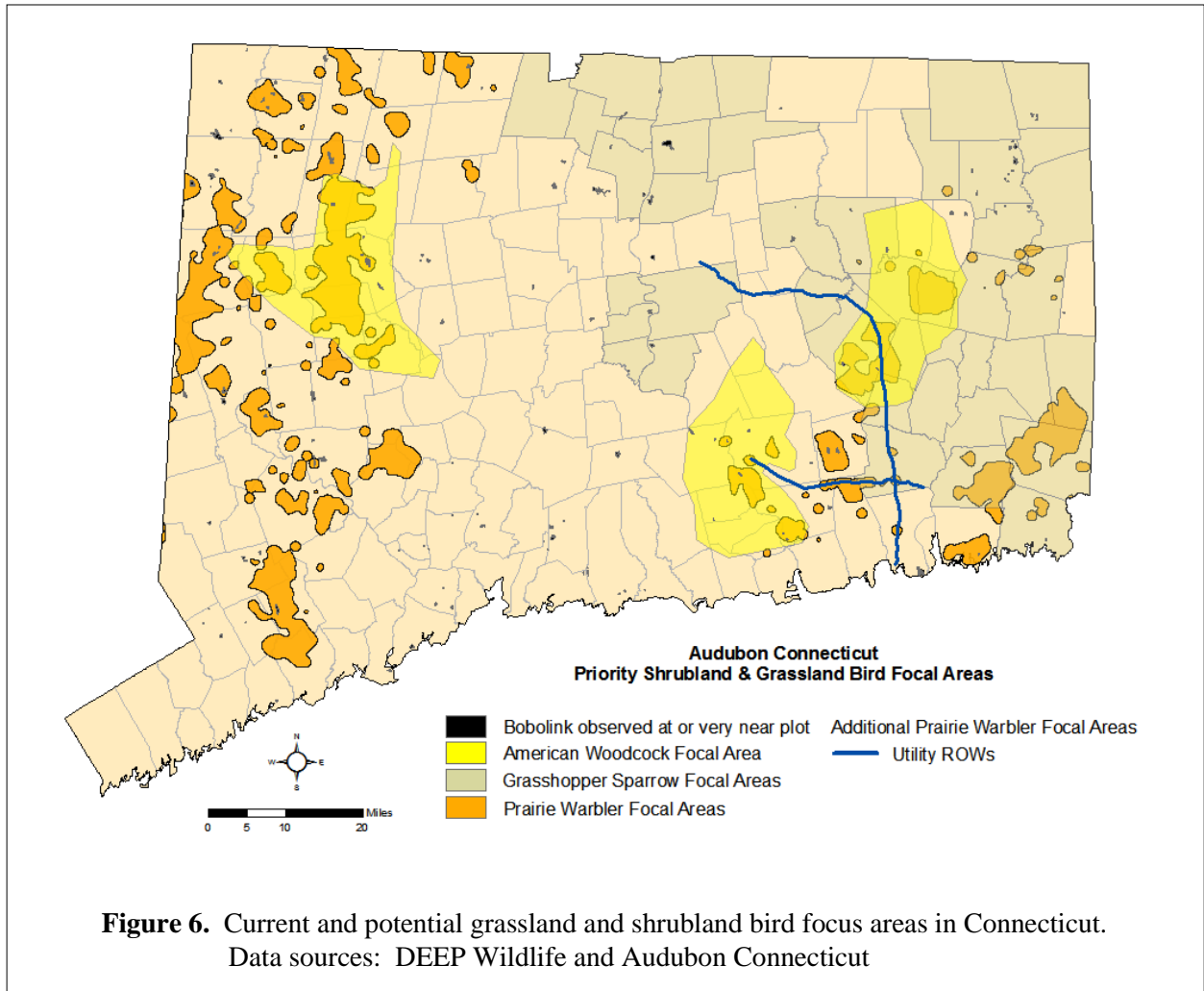
3 Conservation land acquisition and management actions by a wide range of partners including
 4 DEEP, other state and federal agencies, municipalities, non-profit organizations, and private
 5 landowners helped to keep the New England Cottontail from becoming federally declared as a
 6 threatened or endangered species in 2015.

7 This same habitat being actively created or managed for the New England Cottontail helps birds,
 8 reptiles, and many more wildlife species that also use early successional habitat during part or all
 9 of their life cycles. To help reverse significant population declines faced by the state's shrubland
 10 and grassland-nesting birds, Audubon Connecticut has identified broad focal areas where DEEP
 11 and its partners may direct land acquisition and management efforts to conserve such habitats
 12 should the opportunities arise (Figure 6).

13

14 In particular, American Woodcock and Prairie Warbler focal areas are based around New
 15 England Cottontail restoration focal areas (previous map). Grasshopper Sparrow focal areas are
 16 located where warm season grassland fields potentially exist, or could exist with habitat
 17 restoration.

18



The special status of traprock ridgelines and their rust-colored cliffs, forested slopes, and rocky summits for their role in providing critical habitat, clean ground water, outdoor recreation, high aesthetic value, and intriguing natural history is sometimes less understood.

Through central Connecticut and Massachusetts runs a series of traprock ridges. They were formed 200 million years ago when volcanoes spread lava across the valley floor. Over a very long time, the lava cooled into traprock and some of the layers cracked and tilted upward. Erosion washed away thousands of feet of softer brownstone layers, exposing the traprock as long ridge backs standing out above the surrounding landscape. The Connecticut River Valley is

1 divided by the state's main traprock ridge, the 51-mile long Metacomet Ridge, which rises 1,024
2 feet at its highest peak in Meriden (DEEP n.d.; Lareau 1997).

3 Important species of greatest conservation need that depend on traprock ridges, cliffs, or
4 talus slopes include peregrine falcons, timber rattlesnakes, falcate orangetip butterflies, and
5 certain salamanders. Spring wild flowers such as red trillium and Dutchman's breeches bloom
6 on talus slopes for a short period in the springtime.

7 Traprock ridgelines also contribute to the state's quality of freshwater resources.
8 Percolating rainwater filters through traprock and gets delivered to nearby wetlands, reservoirs,
9 and lakes, and recharges groundwater aquifers. Where publicly allowed, these areas also provide
10 hiking trails with varied scenery, superb vistas, and rock climbing, all considered some of the
11 best in the state (CFPA 2006; Fasulo 2002).

12 Residential development along traprock ridges has been attractive since the 1990's when
13 available and developable land in the valley declined, the cost of land in the valley rose, and
14 ridgeline views grew valuable. Because of their high elevation, ridgelines are also ideal site
15 locations for communication towers and other structures. In some places, traprock is quarried by
16 companies for gravel and rock. Development on ridgelines threatens to degrade water quality,
17 rare wildlife habitat, scenic beauty, and existing or future hiking trails.

18 With the passage of Public Act Number [95-239](#), the State of Connecticut set a policy of
19 protection for certain traprock ridges with the passage of the Ridgeline Protection Act. This act
20 protects, albeit not in perpetuity, 44 traprock ridge segments in the state by enabling local
21 governments to enact zoning and conservation regulations to limit residential and commercial
22 use on designated traprock ridges and setback areas.

B. Drinking Water Resources

Connecticut's public drinking water resources include over 150 surface water reservoirs and 4,000 groundwater wells located in primarily urban and suburban areas and serve about 80 percent of the state's population. Of the more than 550,000 acres of watershed land in Connecticut, a third is owned collectively by the State, municipalities, and water utility companies.

Surface and underground water quality issues are a serious public health concern. Drinking water contamination can occur from a variety of sources, including fuel storage spills and leaks, automotive discharges, pesticide and herbicide application, fertilizers, and historical solid and hazardous waste disposal practices. Certain pollutants that do not degrade or dissipate readily underground pose threats to aquifer recharge areas and groundwater quality. Water sources located in areas with more land development and less land in water company ownership or preserved open space are at higher risk of potential contamination (CT DPH and DEEP 2003).

Land conservation is an important part of watershed management for protecting environmental integrity and drinking water supplies. Protecting lakes, rivers, floodplains, aquifer recharge areas, and forested habitat along such lands controls soil erosion and promotes water infiltration and buffers aquatic resources from runoff and non-point pollution, such as oil from parking lots and lawn fertilizers from neighborhoods.

For example, core forest areas next to or nearby water courses and water bodies improve water quality by acting as a natural filter to groundwater and surface water systems. A study of 27 water suppliers conducted by the Trust for Public Land and the American Water Works Association in 2002 found that the more forest cover present in a watershed, the lower the public water treatment costs. According to this study, for every 10 percent increase in forest cover in

the source water area, treatment and chemical costs decreased approximately 20 percent (Ernst et al. 2004).

C. Outdoor Recreational Resources

Connecticut is rich with natural-resource based outdoor recreational activities. DEEP's system of Parks, Forests, Wildlife Management Areas, and water bodies provide a spectrum of recreational opportunities for residents and visitors, from bird watching to hiking, kayaking to hunting, and camping to horseback riding. The State also provides places along the shoreline to visit beaches, go saltwater fishing, and more. In addition to these, statewide trails, greenways, and blueways are used by thousands of walkers, bicyclists, and other users every day.

To extend such opportunities to as many as possible, accessible parking and picnic tables for individuals with disabilities are found at all State Park and Forest recreation areas, and many areas provide additional features such as accessible restrooms, camping, and fishing platforms.

The 2011 [Statewide Comprehensive Outdoor Recreation Plan](#) (SCORP)²⁸ quantified the supply and demand of public outdoor recreation areas and activities through a survey to citizens and all 169 municipalities in the state. The supply inventory showed that through its 110 boat launches, 107 State Parks, 32 State Forests, and 44 Wildlife Management Areas, DEEP provides the major share of the natural resource-based supply of outdoor recreation in Connecticut, including 71% of hunting activities, and 26-30% of boating access, camping, fishing, and water sports.

DEEP's Parks, Forests, Wildlife Management Areas, and water bodies are shown to provide significant sources of revenue and well-being for the state's communities. According to

²⁸ Submitted to the U.S. National Park Service as a requirement for federal funding for park land acquisition and facilities development, maintenance, or upgrade.

1 [a study by the University of Connecticut](#) on the economic impact of DEEP-managed lands,
2 during 2010, State Forests and Parks hosted more than 8.5 million visitor-days, nearly half of
3 which were at for-fee venues, and generated an estimated \$544 million through tourism activities
4 within Connecticut (Gunther et al. 2011).

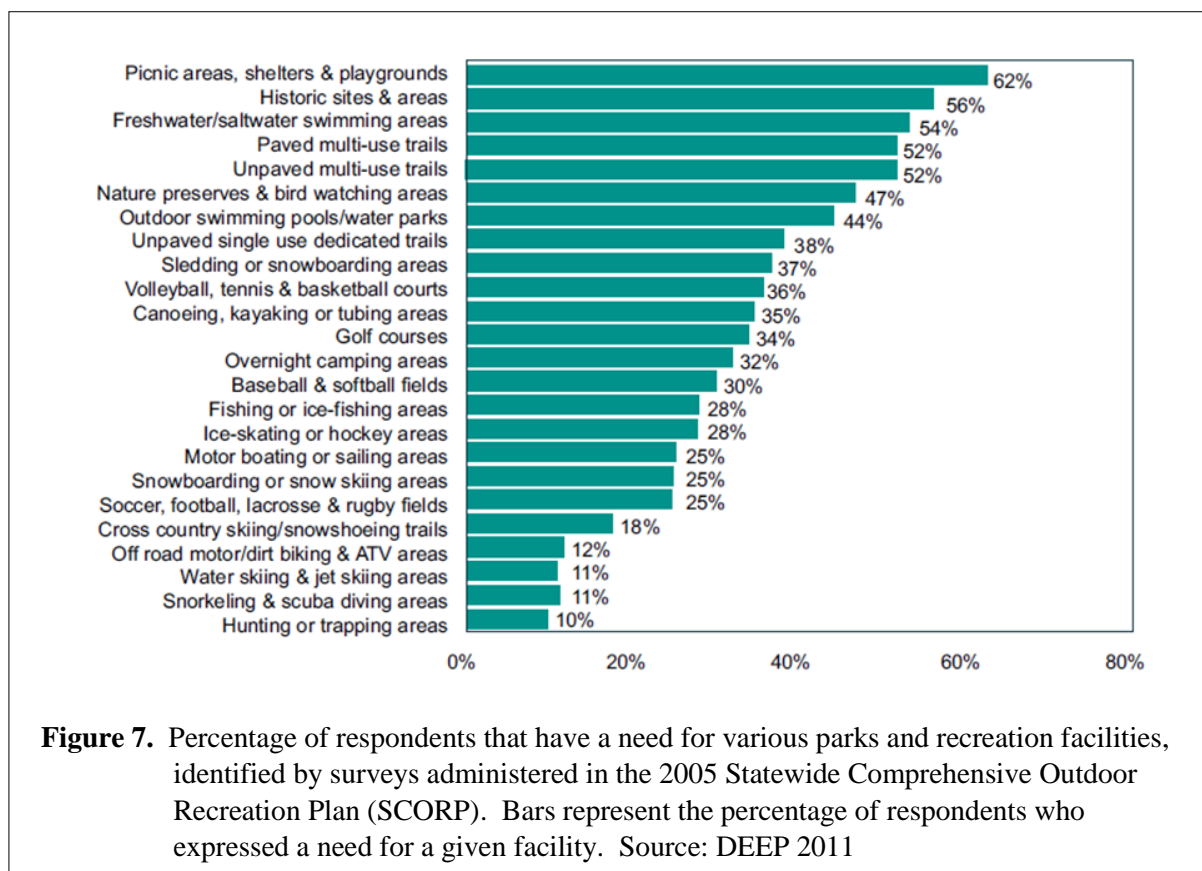
5 At least 2,100 lakes and ponds are available for public recreation and DEEP stocks an
6 estimated 1 million fish at 2,000 sites across the state, all of which also contribute to the state and
7 local economies. In 2010, DEEP sold and issued 145,799 inland or all waters fishing permits,
8 and anglers spent an estimated \$116 million on fishing expenses. During the same period, both
9 sportspersons and non-anglers spent an estimated \$36.8 million for recreational boating.

10 Even some who may not step foot onto DEEP land or participate in these activities
11 indirectly benefit from being neighbors with the agency. According to the study by the
12 University of Connecticut, single family home owners in the state were estimated to derive
13 amenity values of \$270 million annually from overlooking DEEP-managed Parks, Forests and
14 Wildlife Management Areas.

16 **I. Outdoor Recreation Needs**

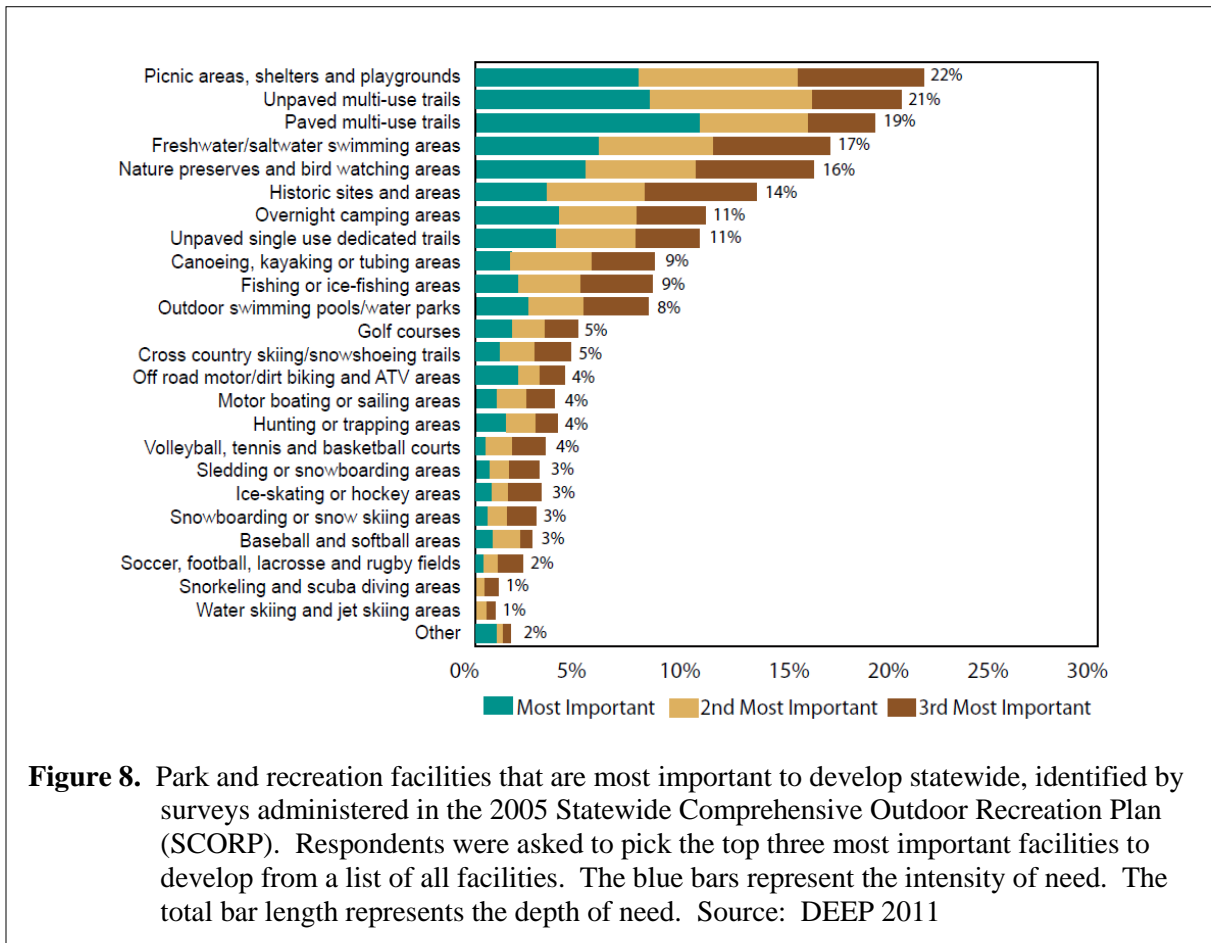
17 While DEEP offers a variety and abundance of places to enjoy nature, the Department
18 seeks to enhance these experiences and ensure more equitable and plentiful opportunities to be
19 outdoors. The SCORP and similar surveys conducted by DEEP's Office of Long Island Sound
20 Programs found that unmet demands for certain activities, the small-sized and scattered nature of
21 DEEP land holdings, and habitat loss to development pose some challenges for providing public
22 outdoor recreation. Using the results of these surveys, DEEP set priorities aimed at supplying
23 quality outdoor recreation experiences for all of Connecticut's residents.

For example, the acquisition of lands that serve to expand the state’s major recreational trail systems and provide additional water access areas are Green Plan priorities. Of the natural resource-based activities DEEP has a mission to provide, respondents to the [2005 SCORP survey](#) expressed a need for, and rated important to develop or enhance, activities associated with water access areas, trails, and nature preserves (Figure 7 and 8). This trend appeared again in the updated SCORP survey in 2011.



In particular, providing public coastal access areas is a high priority of the Green Plan. Coastal State-managed recreation areas are some of Connecticut’s most visited, providing access to Long Island Sound for swimming, boating, fishing, clamming, and other activities. In 2004, DEEP’s Office of Long Island Sound Programs administered a survey to assess the needs and

priorities of coastal public use and access. Of those that responded to the survey, 81 and 83 percent indicated a need for additional public access to shoreline wildlife viewing and boating opportunities, respectively (DEEP 2015).



In order to meet these statewide outdoor recreation demands and others, DEEP and its partners should protect lands and waters with the highest potential to afford them. As they are acquired, DEEP will evaluate lands that are added to State Park, Forest, and other areas to expand recreational opportunities for persons with disabilities, such as creating paths of travel to and from existing accessible features.

D. Open Space in Urban Communities

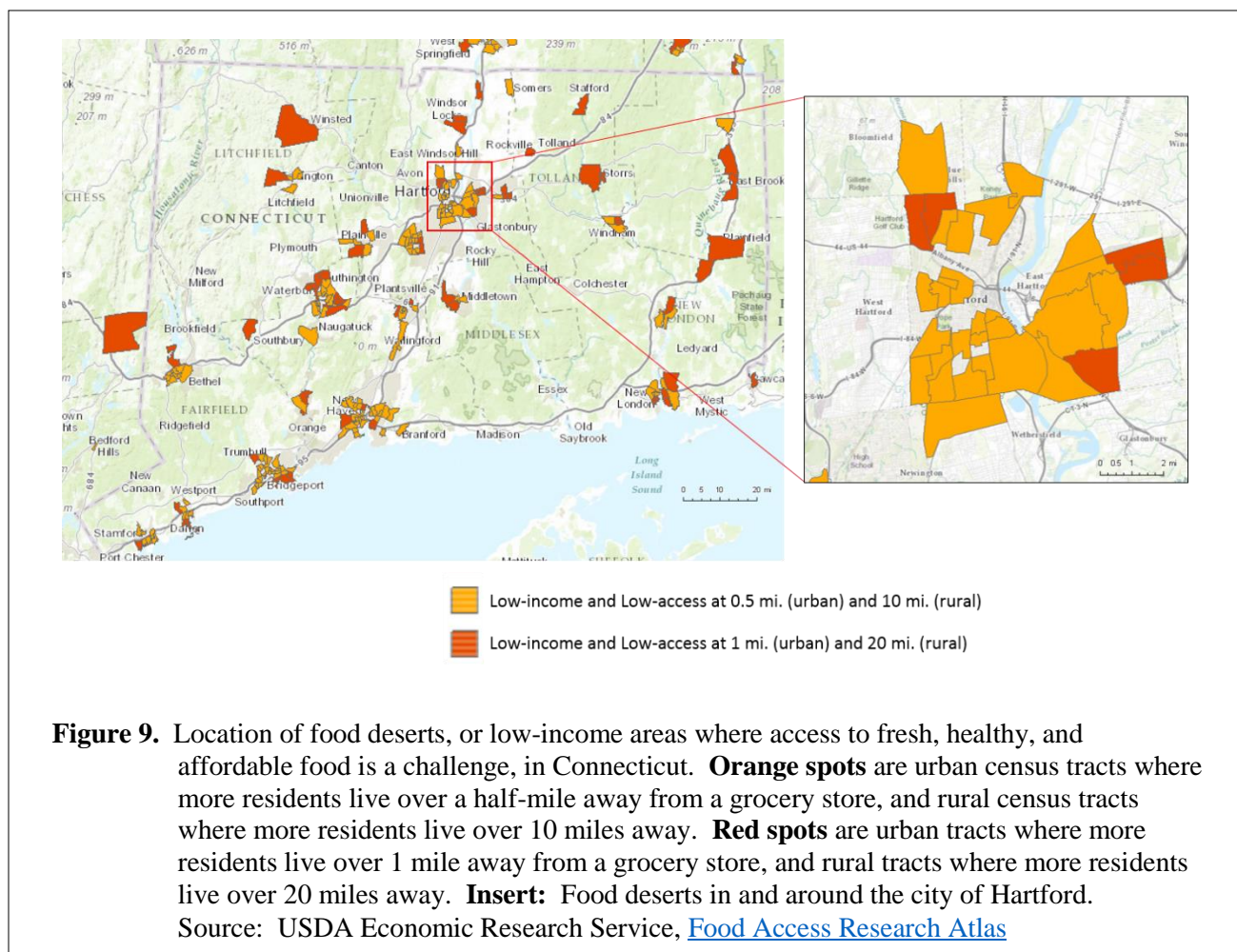
Connecticut's most densely populated areas are also some of the most vibrant, driving the state's innovation, tourism, and culture. However, the development of cities in terms of infrastructure and transportation has concentrated a disproportionate percentage of potential pollution sources in urban areas that may cause disproportional health impacts on their residents, such as higher risk and incidence of asthma and low birth weight.

In addition to pollution, food insecurity is a concern for contributing to high incidences of obesity, diabetes, and other diseases in some of Connecticut's more densely populated areas. Some of the state's urban areas are considered "food deserts," or low-income neighborhoods with inadequate access to fresh, healthy, and affordable food, by the U.S. Department of Agriculture (Figure 9). These health impacts can be reduced when natural land covers and community gardens are incorporated into city planning.

For example, the conservation of natural tree and vegetated ground cover in cities removes pollutants from the air, promotes rainwater infiltration, and lowers air temperatures, thereby reducing asthma rates, surface water runoff, and rising energy costs (Nowak and Crane 2002; Nowak et al. 2006). Similarly, urban parks, trails, and riverfront pathways provide a safe and attractive means of physical fitness and disease risk prevention.

In its efforts to ensure that all segments of the state's populations have equal access and benefits of its programs and services, DEEP considers urban areas in its land acquisition and open space grant programs project selection criteria. The State [Open Space and Watershed Land Acquisition](#) and [Urban Green and Community Gardens Grant Programs](#) help to reduce food insecurity, encourage active lifestyles, and strengthen neighborhood relationships by providing

- 1 DEEP's land conservation partners with funding towards acquiring new or enhancing existing
- 2 urban open space, community gardens, and passive outdoor recreation opportunities.



- 3
- 4 The [Recreation and Natural Heritage Trust Program](#) (RNHTP) plays a major role in
- 5 adding lands to DEEP's system of State Parks, Forests and Wildlife areas, though the bulk of
- 6 these areas mainly exist outside urban developed areas. This is partly due to the combination of
- 7 limited available bond funding and the relatively high cost of land in urban areas.
- 8 Recommendations made in the new Green Plan should improve the identification of appropriate
- 9 acquisition opportunities and increase acquisitions of land in urban areas.

1 One of the most recognized obstacles facing Connecticut’s urban populations in
2 accessing open space is a lack of transportation. Many urban residents lack transportation to
3 open space and recreation opportunities often found in rural areas, and public transportation is
4 currently unavailable to certain State Parks or Forests. Linking urban communities to open space
5 within their cities and in other towns is critical because it better connects residents to the public
6 lands they own, diversifies the constituency and support for environmental protection, and
7 ensures equity across the state.

8 In its efforts to raise awareness about urban environmental issues and public health
9 concerns that disproportionately affect lower income and urban communities, DEEP’s [Office of](#)
10 [Environmental Justice](#) partners with the Parks Division and disability, youth, agricultural, and
11 other community groups to provide environmental educational programs that bring urban youth
12 to state and local open spaces. For example, each summer, children from urban communities are
13 taken to visit State Parks or Forests to learn about water, air, habitat, wildlife, and more as part of
14 DEEP’s [No Child Left Inside®](#) initiative.

15 The chief solution to improving public access to open space in populated areas is to
16 acquire more land or vacant lots in urban areas, and to do so proactively within the urban
17 periphery before development in those areas intensifies. Coordinated efforts by the state and
18 federal agencies, cities, and non-profit conservation organizations to convert brownfields into
19 greenspaces serves as another means to improve residents’ access to open space and the benefits
20 it provides.

21 Partnerships among the State of Connecticut, the Environmental Protection Agency, and
22 municipal partners can ecologically revitalize blighted lands in urban areas into scenic

recreational and educational greenspaces where residents can find low-impact opportunities to picnic, take walks, watch wildlife, and other passive activities (USEPA 2009).

E. Working Farmlands

Connecticut's history of agriculture has shaped the state's bucolic landscapes and a cultural heritage so valued today. Agricultural lands and heritage are major assets that contribute to economic activity and significantly enhance the quality of life for residents and visitors to the state. The stewardship of Connecticut's 321,000 acres of cropland, pasture, and farm woodlands provide a host of environmental and social benefits.

For examples, low-intensity grazed pasturelands and late-season mowed hayfields provide nesting habitat for significantly declining grassland bird populations. Local food production reduces carbon emissions by reducing reliance of food and other products shipped from long distances and encourages healthy lifestyles. Barns, stone walls, and open fields help define community identity, rural character, and maintain important links to the state's history and culture (CT DoAg 2012).

Farmland today is a limited resource in Connecticut, where the population density is high, the pressures to develop land are intense, and the price of farmable land is expensive. In 1910, farmland once covered 68 percent of the state, whereas now it only covers about 7 percent (NASS 2014b, Wilson and Chester 2010).

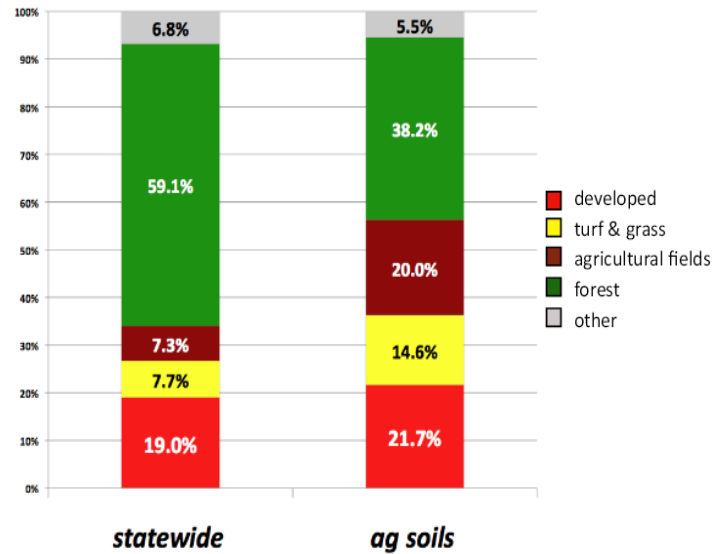
According to an analysis of statewide land cover change by the Center for Land Use and Education and Research, 39,680 acres of agricultural fields were lost to development and related land covers between 1985 and 2006 (CLEAR 2014). Moreover, in 2006, only about 20 percent of land uses overlying prime or important agricultural soils were agricultural fields (Figure 10).

1

Figure 10.

Connecticut land cover distribution in 2006. Left: entire state area. Right: land cover types covering prime and important agricultural soils.

Source: Wilson and Chester 2010



2

3 Next to the availability of what farmable land remains, intergenerational land transfer is a
4 major obstacle to the protection of agricultural lands from development into uses incompatible
5 with open space purposes. Current farmers may pass their lands to their children or relatives
6 who may not share a desire to keep farming. These new farm landowners can be pressured to
7 sell their property to a land developer.

8 To counter the loss of productive or historical farm and farm woodland to development or
9 other land use changes, DEEP, the State Department of Agriculture, and local non-profit
10 conservation organizations have been working alongside private landowners to plan for the
11 future conservation of their properties. These partnerships are key to effectively protecting or
12 transferring working and retired farmlands to other farmers or landowners who share the same
13 conservation vision for Connecticut's agricultural heritage.

14

VI. Identifying High Priority Lands for Conservation

Connecticut has a statutory responsibility of protecting 21 percent of the state's land area by year 2023. Cumulatively, the State and its land conservation partners hold an estimated total 496,217 acres as open space, or about 15 percent of Connecticut's land area. To advance the acquisition of high quality lands and waters for environmental conservation and public recreation, the Green Plan recommends a two-step process for identifying and prioritizing lands for open space:

1. Evaluate subject property relative to existing open space using geo-spatial map layers available at [Connecticut Environmental Conditions Online](#) and the pilot [Public Use and Benefit Land Registry](#); and
2. Assess site-specific characteristics relative to environmental and recreational open space needs and goals using the Green Plan and state and regional decision support tools.

Lands of high conservation value include parcels containing, protecting, or enhancing environmental and recreational resources identified as priorities for conservation in this Green Plan. Municipalities, non-profit land conservation groups, and water companies interested in applying for a State open space grant should utilize the following sub-sections and refer to the [5-year Action Strategy](#) of this plan to determine if lands they are interested in conserving have, or are capable of having, features that align with the state's open space priorities.

When evaluating a property relative to a specific open space goal or priority identified in this Green Plan, DEEP encourages its partners to seek and evaluate appropriate data sources in relation to their subject parcel. Depending on the priorities sought to be met, the data examples below are some resources that may be useful for evaluating the value of properties for open space protection.

1. Evaluate Existing Open Space using Geo-spatial Data

Like most natural resource conservation groups, DEEP analyzes the spatial relationship of natural features such as topography, habitat, wildlife, water resources, and man-made characteristics such as zoning and land use with the aid of geographic information systems (GIS). Equipped with such information, DEEP can more quickly understand the importance of a particular property for conservation and can proactively seek to protect parcels of significant value.

DEEP uses tools and maps that show the location of statewide public open space, such as the Public Open Space Mapping datalayer on [Connecticut Environmental Conditions Online](#), to assess what extent a parcel(s) of land could help to connect existing open spaces and conserve environmental or recreational resources. These tools are also available to municipalities and the public for viewing or downloading at DEEP's [GIS Data download](#) webpage.

The [Protected Open Space Mapping Project](#) (POSM) was designed to identify and catalog all dedicated open space in Connecticut by researching records at town halls and completing a geodatabase encompassing all 169 municipalities. The open space parcels identified consist of state, federal, municipal, and privately-held open space holdings and includes land or an interest in land acquired to support natural resource-based passive outdoor recreation, forestry and fisheries activities, or other natural resource conservation activities.

Because they do not support natural ecosystems or passive outdoor recreation, parcels that were not mapped under this project include: administrative buildings; athletic fields; cemeteries; country clubs; golf courses; historic homes; housing authorities; landfills; libraries; marinas; museums; parking facilities; post offices; public safety departments; pump house

stations; schools; tennis courts; town garages; town halls; and transfer stations. Following data gathering, the information collected at town halls was quality checked prior to being released for public use.

At present, 143 or 85 percent of municipalities in the state have been researched under POSM. Unfortunately, the data collected by staff from town halls did not include conservation easements, was quickly outdated, and DEEP is left unaware of future lands that become acquired or protected for protection by its partners.

To help meet this challenge, DEEP established the Public Use and Benefit Land Registry (Land Registry)²⁹, a new pilot mapping system that will inventory and eventually show all existing protected open space in Connecticut. The POSM project was an important and substantial undertaking that set a foundation for the Land Registry's construction.

I. The Public Use and Benefit Land Registry

With the passage of Public Act [14-169](#), DEEP was authorized to develop a new component to the State's open space strategy, a GIS database and map viewer system that constitutes the State's [Public Use and Benefit Land Registry](#) (Land Registry). DEEP launched the Land Registry in early 2015 with a pilot map layer consisting of three State Parks: Hammonasset Beach, Bluff Point, and Haystack Mountain State Parks.

Modeled after similar initiatives such as the [National Conservation Easement Database](#), the Land Registry's database will be capable of providing information for lands owned by DEEP, other state agencies, municipalities, land conservation organizations, and state-owned water supply lands. Developed in relation with other statewide geographic data, the Land

²⁹ (CGS) Sec. 23-8e

1 Registry gathers data to assist in planning for what areas DEEP would like to conserve in the
2 future.

3 The Land Registry is a publicly-available tool for use in evaluating property relative to
4 existing open spaces and to ensure that the public is informed of what lands have been protected
5 and why those lands have been acquired. The mapping system allows users to query the Land
6 Registry's map layer attribute tables to learn more about protected open space in the state,
7 including purposes of open space, levels of legal protection, specific easements or easements tied
8 to specified locations, acquisition funding sources, right-of-ways, land management plans, and
9 more.

10 Following uniform standards and practices, documents related to DEEP's ownership of
11 property within the state are recorded in the agency's unit of Land Acquisition and Management
12 and are then scanned into the Land Registry's computer database. To help make this process
13 more efficient and to improve this dataset for users, DEEP should consider requesting applicants
14 to the State's open space grant program to submit digital versions of property surveys.

15 Depending on the scale at which users view the pilot data layer, varying levels of parcel
16 information will appear. For example, from the largest visible scale open spaces will be shown
17 as unbroken, large polygons, and become delineated into parcels as users zoom into the map
18 (Figure 2).

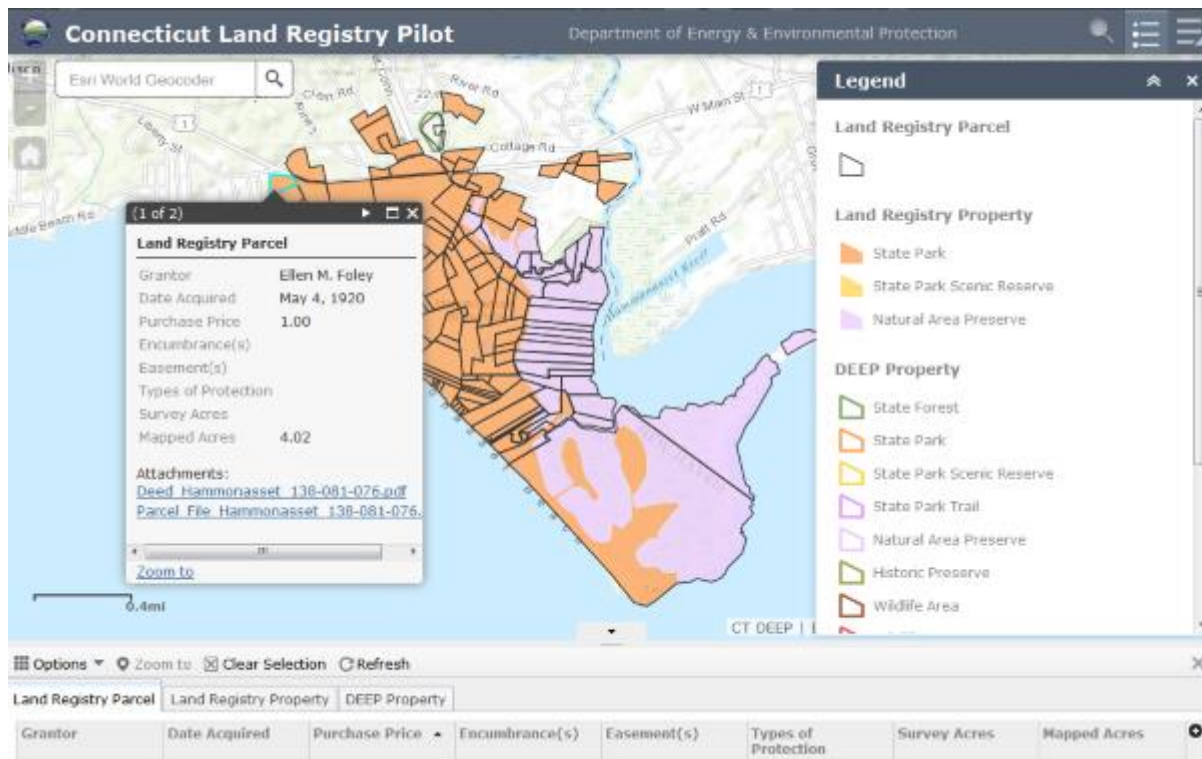


Figure 2. Hammonasset State Park as viewed in the [Public Use and Benefit Land Registry pilot portal](#). The Land Registry allows users to browse state lands, determine property ownership, and research, view, and download copies of parcel information, including deeds, surveys, and management plans. Greater levels of detail are available as the map zoom level is increased.

As DEEP continues to populate the Land Registry, additional DEEP lands will be added. Facility by facility, the parcel data collected through the Protected Open Space Mapping Project will be added until the data layer is replaced by the Land Registry. The Land Registry will then be expanded to include lands protected under the State Open Space and Watershed Land Acquisition Grant Program and other lands held by DEEP's land conservation partners. Populating the Land Registry with open space data will be a great task and requires the cooperation of many parties.

1 For the Land Registry to be effective, DEEP will be relying on its partners to help keep
2 statewide open space data up-to-date and accurate. To populate the geodatabase and increase the
3 accuracy of the estimated area of statewide open space, DEEP will evaluate establishing a
4 system that encourages the voluntary submittal of information regarding new acquisitions by its
5 partners³⁰. An example of such a system could include a standardized form that can be filled out
6 by Towns and returned to DEEP for input into the Land Registry.

7 The completion of the Land Registry will have an immediate impact on protecting
8 Connecticut's natural and cultural resources, defending the importance of DEEP's most highly
9 valued properties, and providing a more comprehensive and transparent open space database for
10 all users. The Land Registry will be a public-private partnership that brings together state
11 agencies, municipalities, and private land conservation groups around a common goal to
12 significantly increase the future amount of open space protected in Connecticut.

13 Ultimately, acquiring land for open space purposes cannot be accomplished using a
14 rigid approach based strictly on an inventory of high-priority properties. Though multiple
15 conservation priorities generally increase the value of a parcel of interest, parcels need not be
16 contiguous with existing open space or lay within a priority acquisition focus area to be equally
17 important for open space acquisition.

18 Such parcels may have value if they serve to connect protected areas in the future, or are
19 found to have rare or endangered species or other landscape features that DEEP was unaware
20 existed beforehand. While the Green Plan recommends DEEP and its partners seek to be more
21 proactive in identifying and protecting parcels that may be of high conservation value, it also
22 recognizes the need to remain flexible and acquire lands opportunistically.

³⁰ (CGS) Sec. 23-8b(2)

2. Apply State and Regional Decision Support Tools

The Green Plan refers to existing State Plans and other related research for guidance in prioritizing land cover types and public use needs for open space conservation in Connecticut. The full list of State Plans used to identify priority lands of high value for conservation can be found in Appendix G. These documents represent the conservation values of the Green Plan by having identified unmet or underserved open space needs and focus areas with a high likelihood to support certain environmental or recreational resources in Connecticut.

When State plans with relation to open space are used together with the geographic data layers hosted on [Connecticut Environmental Conditions Online](#), DEEP and its land conservation partners can strategize the protection of the state's most at-risk resources and unmet recreational needs. Generally, higher conservation value is placed on acquiring parcels that can meet multiple state conservation priorities, on parcels that are located within or close to population centers, and parcels capable of providing universal outdoor recreational opportunities in areas underserved by existing activities.

In addition to State planning documents, there is an abundance of recently developed regional conservation planning resources. Besides funding availability and other constraints, a major impediment to effective State land acquisition has been the lack of a single comprehensive evaluation of the most significant potential land acquisition opportunities based on specific open space needs and goals. Currently, a comprehensive tool to help state and regional decision makers identify and prioritize lands to acquire for protection does not exist.

In order to quickly identify potential statewide land acquisition opportunities that best address Connecticut's open space goals, a more focused analysis is needed than that which can

1 be accomplished using available planning resources independently. For example, the Office of
2 Long Island Sound Programs used a weighted-sum overlay based on several ecological criteria to
3 identify acquisition focal areas in the development of the DEEP's [Coastal and Estuarine Land](#)
4 [Conservation Program \(CELCP\) Plan](#).

5 Through conducting a similar geo-spatial analysis, DEEP's unit of Land Acquisition and
6 Management could produce the first statewide and regional maps of high-priority opportunities
7 for land acquisition. Such maps could be used by DEEP and its partners to proactively target
8 limited time and financial resources to the most important or at-risk lands for conservation or
9 recreation.

Connecticut Key Lands for Conservation

Using a Multi-criteria System to Identify Coastal Areas for Conservation

12 DEEP's [Coastal and Estuarine Land Conservation Program \(CELCP\) Plan](#) was approved in early
13 2016 by the National Oceanic and Atmospheric Administration's Office of Ocean and Coastal
14 Resource Management, which allows the State Department of Office of Long Island Sound
15 Programs to administer a highly-selective grant program for which federal funding is allocated.

16 The CELCP Plan purpose is to protect important coastal and estuarine areas that have significant
17 conservation, recreation, ecological, historical, or aesthetic values, or that are threatened by
18 conversion from their natural or recreational state to other uses, giving priority to lands which
19 can be effectively managed and protected and that have significant ecological value.

20 In order to better identify potential coastal land acquisition opportunities that address
21 Connecticut's CELCP Plan conservation goals, DEEP will implement two conservation planning
22 sub-areas. The first, referred to as the "Project Area," is an area that contains Connecticut's
23 priority coastal conservation values identified in the CELCP Plan, defined by areas not already
24 developed or held as protected open space in 42 coastal and estuarine municipalities.

25 Using a geographic information systems (GIS) weighted-sum overlay, the CELCP Project Area
26 was further distilled to 'focus areas' that identified unprotected coastal lands with features
27 indicative of the CELCP Plan targeted coastal conservation values (Figure 3). Resulting ranking
28 scores created "hotspots," or areas with significant levels of conservation value (Figure 4). This

refining process aimed to target limited resources to high-priority land acquisition opportunities likely to successfully compete in the competitive national CELCP funding process.

DEEP's Office of Long Island Sound Programs launched an online map viewer, the CELCP Plan [Focus Area Viewer](#), to aid in locating coastal land acquisition 'focus areas' most likely to contain priority coastal land conservation values (e.g., tidal marsh migration areas, core coastal forests). Information provided by the Focus Area Viewer, other DEEP geo-spatial data, and local coastal area land conservation knowledge can be used by DEEP and its partners to identify potential coastal land acquisition priorities.

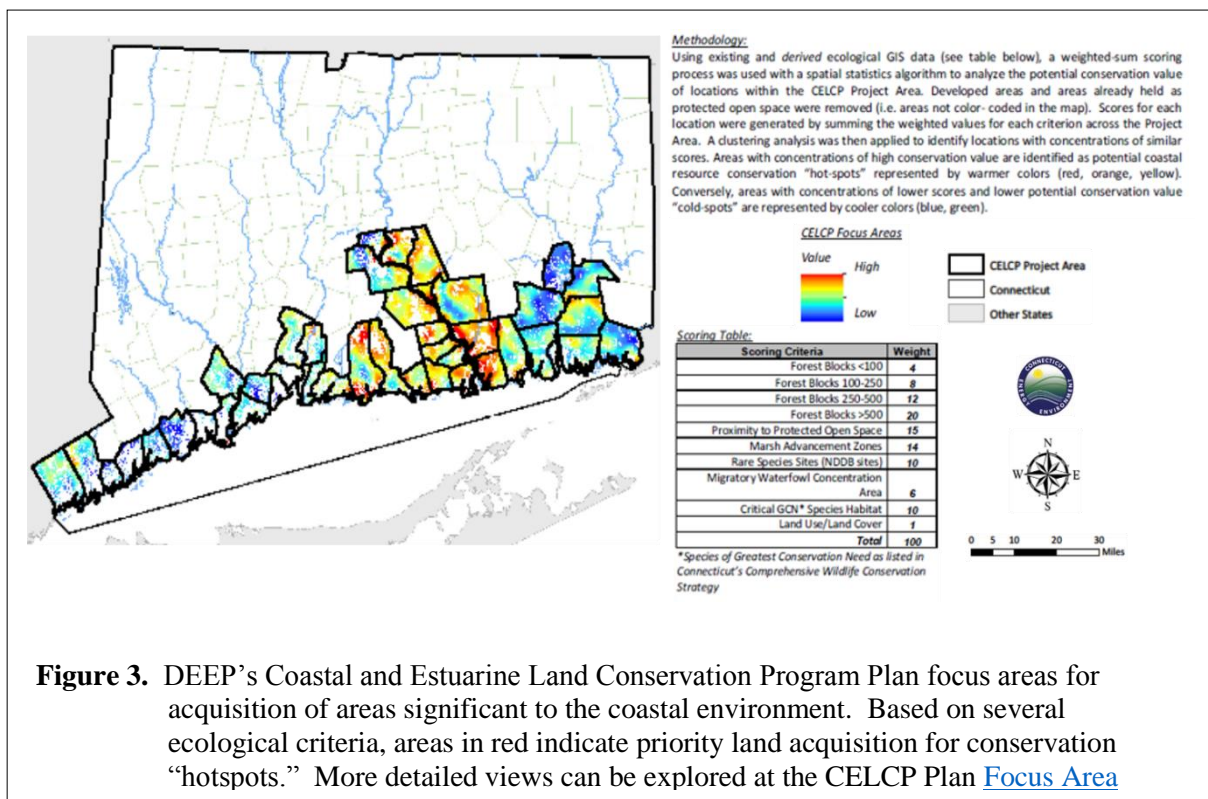


Figure 3. DEEP's Coastal and Estuarine Land Conservation Program Plan focus areas for acquisition of areas significant to the coastal environment. Based on several ecological criteria, areas in red indicate priority land acquisition for conservation "hotspots." More detailed views can be explored at the CELCP Plan [Focus Area](#)

Figure 4.

DEEP's CELCP Plan 'focus area' map developed for the Town of Westbrook. Based on several ecological criteria, areas in red indicate priority land acquisition for conservation "hotspots."

More detailed views can be explored at the CELCP Plan [Focus Area Viewer](#).

